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POPULAR Computing WEEKLY

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Vol 4 No 20



Robin Hood on target see page 5

Spectrum 128K from Sinclair?

SINCLAIR Research is apparently on the point of launching a new enhanced Spectrum machine, planned for sale around September this year

The new model will be a 128K version of the Spectrum Plus

The Spectrum 128K is expected to utilise bank switching techniques to access the extra 64K memory, while being wholly upwardly software compatible with the current model. The Z80 chip, on which the Spectrum Plus is based can only access 64K Ram at any one time

The use of banked memory will make a difference in the games area, where the Spectrum is strongest, since extra rooms for instance, or locations in an adventure can be easily added and accessed

A small number of prototype models of the Spectrum 128K machine are believed to be already with software houses.

The Spectrum 128K also seems likely to offer an improved sound capability, joy-

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Atari's 130ST faces axe

CONFUSION still surrounds which of the eight new micros announced by Atari in December will ever see the light of day

It is now not clear if the 128K version of its high-specification 16 bit ST range will appear

Also, as it hinted last month Atari has confirmed that it will not now launch its 64K version of the 8-bit 130XE in the UK

Although Atari showed a prototype of the 128K 130ST at CES this year, US product manager Richard Frick has been reported as saying that Atari will now only offer one version of the ST the 512K 520 "because it doesn't make any sense" to sell a smaller version

'We are still looking at possibilities for other ST machines,' said UK sales and marketing manager Rob Harding 'It depends on which machine we decide to put in the £400-£500 price bracket."

Further signs that Atari is still undecided were confirmed by Simon Westbrook, Atari's UK general manager, who said, "It might just be that other models might come in above the 520ST "

Further, the company has hit problems with its 520ST model in the United States and has now announced the machine will not reach US stores until July.

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SPECIAL ISSUE HOME BUSINESS



Quake minus 1 Details inside

INSIDE) LOW COST PRINTERS COMPARED – 13 OF THE BEST)



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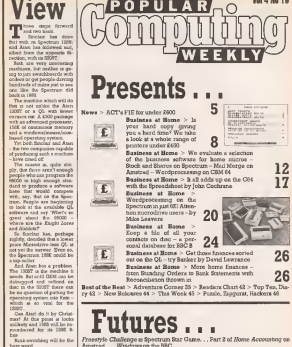
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POPULAR Computing WEEKLY

Vol 4 No 19

View

Three steps forward and two back.

Sinclair has done that with its Spectrum 128K, and Atari has followed suit, albeit from the opposite direction, with its 520ST.

Both are very interesting machines, but neither is going to jam switchboards with orders or get people driving hundreds of miles just to see one like the Spectrum did back in 1982.

The machine which will do that is not unlike the Atari 130ST or a QL with fewer corners cut. A £300 package with an advanced processor, 128K of continuous memory and a windows/mouse/icon-based operating system.

Yet both Sinclair and Atari – the two companies capable of producing such a machine – have cried off.

The reason is, quite simply, that there aren't enough people who can program the 68000 to high enough standard to produce a software base that would compete with, say, that on the Spectrum. People are beginning to look at the available QL software and say 'What's so great about the 68000 – where are the *Knight Lores* and *Hobbits*?'

So Sinclair has, perhaps rightly, decided that a lower price Microdrive-less QL is not yet the answer. Even so, the Spectrum 128K could be a top-seller.

And Atari has a problem. The 130ST is the machine it needs. But until GEM can be debugged and refined on disc in the 520ST there can be no question of putting the operating system into Rom – which is so vital for the 130ST.

Can Atari do it by Christmas? At this point is looks unlikely and 1985 will be remembered for its 128K 8-bits.

Bank-switching will be the buzz word.

Presents . . .

Futures . . .

Freestyle Challenge is Spectrum Star Game. . . Part 2 of *Home Accounting* on Amstrad . . . *Windows* on the BBC

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Atari cuts range

◀ continued from page 1

At January's CES show, Atari had said the 520ST would be in American stores this April

The US delays in the 520ST's launch will apparently not however affect the launch of the 520ST in this country, where it is still expected to be available next month, although Atari's bundling plans for the machine have changed

"The ST will now be available with both a disc drive and monitor bundled with it in late May or early June," confirmed Rob Harding "The price, which has still to be finalised, will be around the £800 mark. Initially, the machines will only be available in very small quantities – some will go to software houses, and some to retailers "

"The 65XE is out now in the US, but we will not be launching it anywhere in Europe When stocks of the 800XL have sold through, we will then decide what consumers want from an 8-bit computer – and that could well be the 130XE "

The 65XE is the second of the XE range announced by Jack Tramiel last December which has subsequently been shelved, the other being the portable 65XEP However Rob affirmed that the 65XEM 'music machine' is still part of Atari's plans

Adding to the confusion, two top UK distributors which have previously supplied Atari machines to independent retailers – Terry Blood Distribution and Lightning – have announced they will be dropping Atari hardware from their range A third, Spectrum Group, has yet to decide if it will continue with the Atari products

Terry Blood attributed its action to an 'unworkable' formal distribution agreement which it called "commercial suicide".

Lightning claims that Atari had demanded high levels of stock that were incompatible with the current state of the market Dave Woods, Lightning's advertising manager, said, "It was a question of what was required for stock commitment – if we took one model, we had to take the lot "

Spectrum's Dudley Langmead commented "Atari has made us its propositions, we have made counter proposals and are waiting to see Certainly the margins are very low indeed. We hope to find a middle course, but if it's not commercially viable, we won't take the range"

Atari's 520 ST – out on its own?

Said Atari's Rob Harding "Atari considers the independent retailers very important, and we are looking at the most efficient way to get our range to them

"We expect distributors to be our business partners and that means they take all our products – in depth We do not want them to use Atari as a warehouse."

It looks as though the vast majority of Atari machines for independent shops will now go through Sihns Shop's SDL distribution arm, which exclusively deals with Atari products With the multiple stores, Atari deals directly with each chain

AI acquires Robin Hood licence

RIGHTS TO produce a micro game based on the hit TV series *Robin of Sherwood* have been granted to Adventure International UK

Mike Woodroffe, the company's managing director, confirmed that work will begin at the end of July The story line will be written by Brian Howarth, and the graphics will be by Tiaman Irmak – the same team as was responsible for *Gremlins*

Apparently there will be three or four *Robin* adventures, with 100 common locations in Sherwood Forest. In addition to the forest, each adventure will have another 30 or 40 locations – a castle, monastery or mill depending on which game it is

The *Robin of Sherwood* adventure will be available for all the big-selling machines

ACT slashes price of F1E micro

ACT has slashed £200 off the price of its F1E micro – bringing its price down to £595.

The package includes an 16-bit 8086 processor (the same as the IBM PCjr), 256K Ram Microsoft's GW Basic, *Activity* an Icon-driven user interface, ACT *Diary* ACT *Sketch*, ACT *Communications*, GFX, a graphics package from Digital Research, and a built-in disc drive running MS-DOS 2 11. The F1E also has a TV output, allowing the machine to be viewed using an ordinary television.

"We are aiming the new-style machine at 6th form and higher education colleges, and the BBC machines as the main competitor," said a spokesman for ACT

"For just £100 more than the BBC, you can get the disc drive which is a 315k, single sided, 3½" model, as well.

At £795, the F1E only sold around 200 units. Now that it is so much more aggressively priced, ACT hopes to compete successfully in the upper end of the home market

Enterprise add-ons out now

THE FIRST peripherals for the Enterprise computer has been announced.

A colour monitor, dot-matrix printer, and joystick interface should all be available by the end of this week

The EP80 + printer, manufactured by Mannesmann Tally, runs at 100 cps (characters per second) with 80 characters per line in 'normal' mode As well as text, it will also print out hi-res graphics It costs £238 95

The monitor is manufactured by Microvitec It has a 14" screen and can display 256 different colours The monitor is priced at £349 95.

The joystick interface allows the use of any 9-pin Din interface joystick and plugs into the Enterprise control ports It costs £9 95

Spectrum 128K

◀ continued from page 1

stick ports, and to use a development of the existing Spectrum Plus keyboard. A price of between £170 and £200 has been suggested.

A spokesman for Sinclair Research denied that any new Spectrum model w planned and said,"We cannot comment on such a potential specification as that."

Landscaped Quake from Monolith

QUAKE – 1 From Beyond is the first arcade game to use the landscaping technique pioneered by Mike Singleton in *The Lords of Midnight*.

Written by Warren Foulkes of Beyond and Mike Singleton, the game involves the deactivation of a rogue computer which controls a mining operation on the sea bed

Quake – 1 and the sequel to *Boulderdash*, *Rockford's Revenge Riot*, will be the first two releases on the Beyond's new arcade label, Monolith, at £9 95 *Quake – 1* will be for the Commodore 64, and *Rockford's Riot* for the Commodore 64 and Spectrum 48K Release date is June 26

More news on p6

BT signs MUD contract

BRITISH Telecom will be offering its first telephone play-by-modem interactive game service later this year

The announcement follows the signing of a licensing deal with Multi User Entertainment, the company formed recently to market the multi-player interactive adventure game and similar products

Trevor Havelock a project Manager with BT's New Information Services, said that "BT are going to publish MUD on our own computer for public access."

The version of the game BT will be running is *MUD 2*, an advanced and expanded version of the game which has been running for free on the University of Essex's mainframe for the last four years and commercially on Compunet since the beginning of this year

BT's *MUD* will run on a VAX minicomputer between 6.00 pm and 8.00 am, beginning in September. It will cost about £2.00 per hour to play, although there may be discounts for credits bought in bulk

Trevor Havelock said that the acquisition of the rights to *MUD* was a logical step

"When BT launched Firebird, there were a number of people who asked what the hell we were doing playing games, and they will probably say the same when they hear about *MUD* – but it will have no effect on the telephone services, and it will increase BT's profitability. We have a large number of computers which are not used outside the business day at present."

Prospects grim for Bug Byte

THE PROSPECTS for Bug Byte Software, which went into liquidation last month, look grim after the creditors' meeting on May 1st.

Total liabilities of around £132,000 were revealed at the meeting and, so far, little interest has been shown in the company's assets

Sinclair cuts Spectrum guarantee

SIR CLIVE Sinclair has announced that Sinclair Research is to change its guarantee period on the Spectrum computer

Previously Spectrums could be exchanged over the counter for a new model up to twelve months after purchase. Sir Clive maintains that this scheme has largely contributed to Sinclair's widely publicised high returns rate, as people traded in an eleven month-old model for a new one

Now the returns period has been cut to thirty days, which is roughly in line with other manufacturers

●Sinclair has now admitted that production of the QL computer has ceased temporarily as high stocks are sold through to distributors and shops

New BBC gets public showing

THE new 64K BBC+ was on Show for the first time at the BBC and Electron Micro User Show held at the Royal Horticultural Hall last weekend.

There was no software specifically for the new machine although Acorn announced a new database *Viewstore* – on Rom at £59.90 which can access the extra memory

Acorn also showed the second-processor version of *Elite* which features colour displays and extra speed.

I'm trying to pack a year's use of the Spectrum into 30 days

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His boss, Badger, known to all as Big B, has informed Phineas that Professor Mole, the world-famous scientist, has been kidnapped and taken to the Secret Lair of the Terrible Hamsters (S.L.O.T.H.).

Your task as Phineas is to read up the background thoroughly (provided in a small book), and rescue the Professor, passing the various tests that Hamsterchief sets along the way

Spectrum 48K Cassette £7.95 Disk £10.95

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Spectrum 48K Cassette £7.95 Disk £10.95

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Printer survey

A PRINTER is perhaps the most useful piece of hardware that you can add to your computer.
Most are either dot-matrix (the printing is made up of dots) or, for a higher quality of print, daisy wheel.
Perhaps the most worrying question is whether a printer will work with your particular computer. Many of the popular home computers have special requirements in this field, while most suitable printers are equipped with a Centronics type of parallel interface. Commodore and Atari use serial interfaces of their own making, but it is possible to buy a parallel interface that will broaden your choice. The Spectrum has no printer port; add-on Centronics interfaces are available, while Interface 1 provides an RS 232 serial interface. Most printer manufacturers provide for RS 232, although normally at extra cost. If you have a BBC B, MSX or Amstrad machine then all you will need to use a parallel printer is a suitable cable. Most printers will allow you to select a UK character set, replacing the hash symbol with a £ sign.



Hardware *Brother HR-5C* **Price** £177 **Supplier** Brother, Shepley Street, Guide Bridge, Audenshaw, Manchester M34 5JD

This machine is an excellent buy for Commodore owners who do not need a big, heavy duty printer for large amounts of work.

The HR-5C is the Commodore-specific version of the HR 5 and as such most the comments here apply to versions which are also available for other machines.

In the case of Commodore users, the HR-5C offers an alternative to the two-way choice of printers which limits them to either the expensive, slow CBM machines, or the better Epsons or Jukis which require expensive interfaces to work with the Commodore 64 or Vic 20.

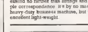
The HR-5C weighs 1.6 kg, measures 30 × 17 × 6 cm and can be powered by batteries or a 6V mains adaptor. As such it's easily portable. It prints either on special thermal paper, which costs about £5 for a 30 metre roll, or on ordinary paper using a cartridge ribbon costing about £3 which last for around 10,000 words. Quality is better with the ribbon, but is acceptable on thermal paper.

Since the HR-5C is fully Commodore compatible, it can print all the CBM graphic characters, and will also operate in condensed or expanded modes.

Operation is almost silent and print speed is 30 cps.

The manual is very much like that of Commodore's MPS-801 and covers files, secondary addressing, user-defined characters and so on in good depth.

At around £154 + VAT, the HR-5C is an excellent choice for the Commodore owner on the move, or whose needs extend no further than listings and simple correspondence. It's by no means a heavy-duty business machine, but is an excellent light-weight.



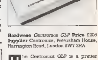
Hardware *Epson P-80* **Price** £184 **Supplies** Epson, Dorland House, 388 High Road, Wembley, Middlesex HA9 6UH

The cheapest type of printer that can be considered for business use is represented by the Epson P-80. This is a compact, neat device that will produce A4 printouts. Measuring about 12 × 4 × 3 inches it runs off its own rechargable battery. An AC adaptor is provided for recharging purposes. Controls consist of a density knob and paper surface select switch, paper feed, power and on-line buttons, and, round the back, four DIP switches to select the character set and line feed protocol and a standard parallel port socket.

The main drawback of the P-80 is that special paper is required. You can either use thermal paper, or in conjunction with a ribbon, transfer paper, but my attempts to use normal sheets of A4 met with very poor results. Fitting the ribbon, a cartridge about the size of an audio micro-cassette, is very simple – the front lifts away and the ribbon just snaps into place.

When you switch the P-80 on, the noise it makes is none too reassuring. The print quality achieved by using the correct paper is fair, but for good legibility it is best to use the double-strike mode. Speed is below average for a dot matrix: 45 characters per second or 22 cps for rough paper. There are a number of print options: underline, emphasized, condensed and so on, as well as a bit image mode for graphics.

The price of the P-80 is about £160. Considering the limitations of the paper requirements, it would be a false economy to buy one unless you specifically need a highly compact printer that runs on batteries.



Hardware *Centronics GLP* **Price** £208 **Supplier** Centronics, Petersham House, Harrington Road, London SW7 3HA

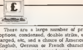
The Centronics GLP is a printer produced by the company that brought you the famous interface standard. It's a cheap dot matrix that'll do just about everything an Epson will do slower but for less money.

What it does have is a NLQ option (near letter quality) that is excellent – NLQ is a print that is well suitable for every business purpose. It works by the printer printing the text twice, the second time slightly offset from the first. This roughly cuts the print speed by half (from 50 cps to around 25) but that's still better than the cheaper daisywheel printers with which the end results compare favourably. My only criticism of this excellent feature is you have to manipulate a not overly accessable set of DIP switches – it ought to be switchable on the front panel.

At £208 this is really a wonderful little printer with potentially excellent print quality – there is also a tractor feed available as an extra for £14.90.

Hardware *Brother M-1009* **Price** £219/£236 **Supplier** Brother

The Brother M-1009 is a good all round dot matrix printer. 50 characters per second is not staggeringly fast but it's adequate. Similarly the print quality in normal mode is not letter quality but it is suitable for listings and informal letters.



There are a large number of print options, condensed, double strike, enlarged, etc, and a choice of American, English, German or French character sets – you can get a pound sign!

In fact it'll do pretty much everything as Epson will, albeit a bit slower. But then it's quite a bit cheaper. Unlike the HR5 it uses a conventional kind of ribbon which works out cheaper in the long run and it's that bit faster. The machine is best seen as a slightly more robust printer than the HR5 and is probably a better bet for heavy use.

Price is £219 for Centronics option or £236 for a dual port machine.

Hardware *Brother EP44* **Price** £258 **Supplier** Brother

Electronic typewriters with suitable interfaces are an attractive alternative to conventional printers, since they offer the option of producing printouts without having to use the computer. The EP44 is an excellent machine in itself, but has some disadvantages for the serious user.

Firstly, the keyboard is of a "pushbutton" rather than full keyboard type, though it's quite useable. Secondly, you must use either thermal paper, which is obviously expensive, or a one-time plastic ribbon in a cartridge, which does not last long and which is also expensive to replace.

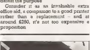
Having said that, some of the facilities are excellent. The print quality is fine, the machine is light (powered by four batteries or by a mains adaptor), and functions include a calculator, simple editing functions, and a serial input/output port which means that the EP44 can be used as a computer printer if you supply a suitable interface cable.

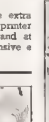
The EP44 takes A4 paper, and has a 15 character LCD display above the keyboard. This shows the characters you're printing and gives the status of the auto underline, carriage return, delete/insert, and other functions.

The RS-232 interface allows you to connect up a CBM 64, Vic, TI99, Apple, and so on, with suitable interfaces, or you can connect two EP44s by modem to transmit messages.

The EP44s portability and special features make it an excellent business tool, but it is not a substitute for a printer; you can connect it to a Brother daisywheel printer if you like, but this seems to defeat the purpose.

Consider it as an invaluable extra office aid, a companion to a good printer rather than a replacement – and at around £260, it's not too expensive a proposition.





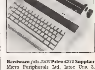
Hardware *Star SG-10* **Price** £259 **Supplier** Star Micronics, Craven House, 40 Uxbridge Road, Ealing, London W5 2BS

The SG-10 is attractive, no bulkier than it need be, and sells for around £260. It is equipped to handle form-fed, roll or cut sheet paper. The tractor feed is easily removed, and the paper-out switch can be disabled for single sheet use. Controls are simple – on-line, form feed and line feed, and, as is usual with printers in this class, self test and hex dump modes can be entered by holding down these controls during power-up. The DIP switches are very accessible – they poke out of the left side of the casing – perhaps almost too accessible.

SG printers use ordinary typewriter ribbons. The advantage with this is that they are cheap and readily available, the disadvantage is that they are slightly more complex to change than a cartridge.

The SG-10 is fast, at around 120 cps, and offers bi-directional printing and a 2K Ram buffer. Noise is no worse than you would expect, and in the normal 80-column mode the print quality is typical of a dot matrix printer. The full range of print options are available: emphasized, condensed, enlarged and so on. Codes give control of other features: codes to allow 7-bit ports to send 8-bit data, a macro that allows you to pre-program a control code sequence, and perhaps most powerful, the ability to download character shapes into Ram and redefine them. This allows you to create proportionally spaced character sets.

NLQ – Near Letter Quality – printing is achieved by passing the print head twice over each line and filling in the gaps. The results are impressive, although the actual shapes of the characters still give the game away. NLQ is a software trick; the printer has no extra print pins. It takes four times as long as the normal mode, but is still quicker than an average daisywheel. A test page that took four minutes on the Juki 2200 was completed in two by the SG-10 in NLQ mode.



Hardware *Juki 2300* **Price** £270 **Supplier** Micro Peripherals Ltd, Intec Unit 3, Wade Road, Basingstoke, Hampshire RG24 0NE

The daisywheel typewriter/printer has an appeal for a specific class of computer user. Modern electronic typewriters are very similar to daisywheel printers, and an interface is available for some of the more expensive models; this works out to be quite costly unless you already own the typewriter.

The Juki 2200 comes complete with built-in interface, Centronics or RS-232; the parallel version can be bought for as little as £270. Light and taking up no more desk space than the average printer, the 2200 is a very useful typewriter. Automatic correction allows neat alterations to be made.

Removing a panel on the right-hand side reveals a standard interface socket; plug in a printer cable, press *Code* and *Print* on the keyboard and the typewriter becomes a printer. The speed is not astounding at around 10 cps but two features help in this respect; bi-direction printing avoids a lot of unnecessary carriage returns, while a 2K Ram buffer means that use of the computer is returned to you long before printing has finished.

The Juki 2200 is fairly quiet – it sounds like a crazed typist rather than something out of *Driller Killer*. The quality of the printing is excellent, quite suitable for all applications, but problems arise with the character set. The pound symbol has the code 125, and ½ sign replaces the standard ASCII â symbol, as well as some other oddities. A few control codes allow you to set line spacing, pitch, margins and select underline, but there is not a UK character set. If you use the 2200 with a good word processing program you should be able to get all the characters you need out of it, but if used as a listings printer you will get some strange results.

My other reservation is the mechanical construction. I would not bank on the 2200 standing up to a very heavy workload.

But if you have need of a typewriter and wish to produce correspondence quality printing, then this machine represents excellent value for money.

Continued on page 11



Hardware *Epson RX-80* **Price** £286 **Supplier** Epson, Dorland House, 388 High Road, Wembley, Middlesex HA9 6UH

The Epson RX-80 is a typical 80 column dot-matrix printer It occupies about 15 by 12 inches of desk space and in its standard form can only handle tractor-fed paper, although the F/T version can also use roll or single sheets of paper The standard model can be bought for about £230, the RX-80 F/T costs around £285 For this you get a printer that looks capable of standing up to a fairly tough life – the print head in particular sports a generous heat sink to keep it cool.

Hardware *Juki 6100* **Price** £370 **Supplier** Micro Peripherals

For good print quality, a "cheap" daisywheel printer is the best solution Typical of these is the Juki 6100 You can buy one for around £370, and for that price you get a printer that has a decidedly industrial air about it The 6100 is large – it takes 15 inch wide paper – and solidly built Controls consist of form feed, reset and pause buttons and pitch switch, while the DIP switches are accessible by removing the top

Inside the printer the daisy wheel mechanism is mounted on a very chunky looking cross-member The ribbon cartridge holds a good deal of ribbon, it is not immediately obvious how to fit it and I am ashamed to admit that my first attempt, without the manual open, resulted in disaster When I got it working, the print quality left little to be desired The pitch control also allows you to select proportional spacing which gives very attractive results

With most of the control codes and DIP switches you would expect from a good printer, it should be no trouble to match the Juki 6100 up with your particular computer Its speed of 20 cps and bi-directional printing make it acceptable for purposes other than word processing (apart from graphics of course). While the 6100 is intrinsically a rather noisy device, considerable amounts of sound insulation inside the case help bring the level down to bearable

Hardware *Star SG-15* **Price** £389 **Supplier** Star Micronics

If you want to produce wide documents, Star produce a version of the SG-10, the SG-15, which has a capacity of up to 15.5 inch wide paper Mechanical differences apart, the 15 only differs in one respect, it boasts a 16K Ram buffer This means that all but very long documents will tie up the computer for no more than a few moments, so you can carry on using the computer while the printer chugs away

Hardware *Star SD-10* **Price** £389 **Supplier** Star Micronics

Impatient and wealthier users may find the Star SD-10 meets their needs It is rated at 160 cps, and while it shares the same printing quality and features as the SG-10, it is mechanically quite different A cartridge ribbon is used the print head is of a more beefy variety, while a bulge at the back allows the addition of optional buffer boards or interfaces The DIP switches are harder to find than those on the SG, as they live beneath the print head. Speed is the SD's forte – in NLQ mode it took 90 seconds to print out my test page Because the print head moves about with such speed, the printer will not operate unless the perspex cover is in place This is a good safety feature but it will irritate users employing cut sheet paper

Hardware *Brother TC600* **Price** £477 **Supplier** Brother

The Brother TC 600 is the deluxe version of the cheap Brother typewriter printers found in electrical stores all over the country Whilst it officially costs £477 which puts it just outside the £450 price brief, in fact you'll probably be able to pick it up for just below that in the shops

The TC600 combines RS232 with a typewriter and 14K memory which is retained even when the machine is switched off It uses the same thermal/matrix system as the cheaper models which means it will print clearly on plain paper but gets through ribbons at quite a pace Aside from being used as a fully featured printer, it can also be plugged into a modem.

The keyboard is very nice indeed (a big improvement on the cheaper models) with smooth action. The TC600 is not the machine to buy if you just want a printer, but if the idea that you can also get a useful portable wordprocessor is relevant this machine would be a good choice

Hardware *Brother HR15* **Price** £510 **Supplier** Brother

The Brother HR15 is a daisywheel printer definitely designed for tough daily business use rather than for the ordinary home user It is large and functional, perhaps less glamourous than cheaper Brother models

Being daisywheel, print quality is excellent and the first time I used it provide a pound sign with no questions asked.

The big trade off apart from price is speed – it's too slow at 13 cps and it's fairly noisy too But, believe it or not the price of £510 (probably less in the shops) is reasonably cheap for the business daisywheel market.

Add on

Program *Masterfile Extension package* **Price** £10.00 **Micro** CPC 464/664 **Supplier** Campbell Software Design, 57 Trapa Hill, Loughton, Essex.

When the two leading business programs for the Amstrad machines, *Tasword* word processor and *Masterfile* database, get together to provide mail merge facilities and the ability to transfer data from one to the other then it is a point of great note.

Essentially you get two programs – the first of which is a utility that will export data, which you previously selected from within *Masterfile* itself. The files that are created can be customised to fit the requirements of *Tasword* (although only the latest disc version will allow mail merging) CP/M or in a format for any program or utility that you may have in mind. Saved files can be accessed sequentially and may be much larger than the available Ram can use at any one time. The process requires answers to be given to half a dozen questions and full prompts are given in the documentation to produce *Tasword* files.

The second program allows more ambitious users to access a database file via a series of call commands that behave almost as though they were extensions to Basic. The idea is that all the data can be read, and altered, by the user's own programs. The possibilities of such a system are limited only by imagination – it is a rare and potentially invaluable facility and I can't understand why it has never been thought of before. For example, you could write a program that performs maths on the database files, calculates totals and automatically returns the information as a newly created record.

This package considerably increases the power of what is already one of the best business utility programs seen to date.

```
the screen flashes to remind you that you are in Extended Mode.
To get back into normal Mode press both the shift keys together
again.

When in [illegible] Extended Mode press EDIT to see the
Extended [illegible] help page. See this for yourself now by entering
Extended [illegible] looking at the Extended Mode help page, and then
returning to this text and getting back into normal Mode [illegible]
[illegible] can scroll on down.

[illegible] enter Extended Mode to type one of the following
[illegible] characters [illegible] To type one of these
characters [illegible] Extended Mode, hold Symbol Shift
[illegible] the relevant key.

[illegible] the cursor while Tasword is in Extended Mode [illegible]
[illegible] keys in the same way as when in normal mode.

[illegible]
```

Tony Kendle

All in one

Program *Micro Office* **Price** £14.95 **Micro** Spectrum **Supplier** SD Micro Systems, PO Box 24, Hitchin, Herts SG4 0AE

Apart from anything else this business pack has one significant virtue, if you have an Epson or Epson compatible printer you can output all the information in 80 columns – this means effectively, that you can use the full width of A4 paper.

It's essentially four programs, a sale and purchase ledger, a mailing list, a stock controller, and microdrive utility.

The Sales and purchase ledgers can hold 250 transactions per month. It can be set for different Vat rates and will list debtors and creditors separately. It can also provide Customer statements and financial totals, and allows you to analyse your files in a number of ways.

The mailing list will hold up to 200 records on each file containing all address details and notes, but most importantly it allows you to print all the information out onto labels – this obvious facility is actually lacking on a good many other similar packages.

The stock controller allows for 900 stock lines with reference numbers, description, quantity cost and sale price – it will allow you to specify

Joining the

There are at least five facets by which a word processor is judged. Text editing ease and flexibility with which the program produces the desired hard copy. File and data handling – the sort of storage device used and how efficiently the program exploits the potential of it. The interaction with the user – how well information is presented on screen and in the documentation, and finally the question of price and value for money.

The priorities of home users obviously differ from those of businesses. Considerations of price and helpfulness often outweigh the need for fast file handling or professional quality printed output and indeed that was the emphasis with early programs such as *Tasword Two* for the Spectrum. This allows the creation of passable copy from a machine that despite its strengths, is eminently unsuitable to the task (indeed Tasman Software even felt the need to release their own printer interface for it).

The program allows an ingenious 'splitting' of the text display from 32 columns to 64 so that documents are seen as they would print justification, block move, file merging etc – all the core utilities required to produce letters and even quite substantial documents.

Its principle limitation is, of course the reliance on tape storage, which prevents greatly increased output of correspondence. With the release of microdrives this criticism became less valid. But unfortunately, although it exceeds any reasonable expectations, it still lacks features that a business program needs – page numbering, tabs, defineable page width etc.

As recently as the last six months a new trend has emerged. Home computers are getting more sophisticated and users are as well both in their requirements and their familiarity with utilities. To match this software has progressed beyond recognition. We are now seeing releases that are a match for existing business programs in terms of technical specifications, but have kept all the desirable qualities that date back to their origins.

There can be little doubt that the dominant business package in this country, and the USA is *Wordstar* – a name that can conjure as much fear and hatred in users as respect. It is the standard by which others are judged and has, by definition, all the expected text editing features, a range of printers designed to be compatible with it rather than vice versa, and the major advantage that it exploits disc-length files of data using a technique where the Ram windows over the stored text.

Wordstar has its origins on early CP/M micros and questions of how quickly it responds are meaningless since performance differs on an 8 or 16 bit machine. However, it is essentially a Z80 program that can be run on the Amstrad and Commodore 128, the principle obstacle being the price – about £300 for the basic program and only slightly less for each of the mail merge and spell checker discs. However, many have also found that for specific reasons beyond the scope of this review it is a difficult program, one that seems to encourage beginners to make mistakes rather than the opposite.

The two latest releases for the home computer market

Program *Superscript* **Micro** Commodore 64 **Price** £99.95 **Supplier** Precision Software, 6 Park Terrace, Worcester Park, Surrey.

big time

are *Superscript*, from the authors of *Easyscript*, for the CBM 64 and *Tasword 464-D*, an upgrade from the author of *Amsword* which, despite its provisional name, runs on both Amstrad machines. Both are disc only but betray the origins of the code by restricting files to 20-25000 characters which can be held in Ram. The drawback is that users have to spend more time keeping track of files and moving text between them in large projects, but you do gain some speed of response by not having to access discs all the time.

However, they take greater advantage of discs to allow spell checking and mail merge. *Tasword* is particularly sophisticated – it allows conditional printing of merged paragraphs as long as certain preconditions are met.

Both programs also share the ability to customise output easily to any printer and both support international and scientific characters (indeed *Tasword* can be used to 'redefine itself' in such a way that the whole program can be presented in a foreign language). They also share no emphasis on clear documentation although *Tasword* has been so elegantly designed that you can use it immediately on loading and, thanks to the help windows, hardly ever have to resort to the manual. Not surprisingly, however, considering the relative prices, *Superscript* offers more options than *Tasword*. Almost every feature you may wish to find on a word processor has been included – far more than present on standard *Wordstar* – such as line tabs so that you can jump to marked paragraphs, 'comment' markers that prevent parts of the text being printed and soft-hyphens ie hyphens that disappear if the whole word can be fitted onto a line.

Of course, the price to pay for this power is that it is a program that has to be learnt slowly rather than launched into. It requires frequent access to the manual, if you can manage to carry it home, and although prompts are presented on screen in a menu/sub-menu form to help out, it can take up to four or five key presses to get the desired option. This is aggravated by the fact that on the 40 column Commodore screen there is a limit to how much room can be taken up by menus.

The 40 column screen also makes it impossible to view the layout of the document as it will appear on the page – a scrolling window onto the text has to be used. Thus, together with the appallingly slow 1541 drive which, despite the programmer's best efforts, has to be relied upon occasionally, and a display which inevitably looks blurry on a TV, gives the effect of a superb piece of programming that exceeds the ability of the hardware to support it. This may be the last major home micro to suffer such a problem. The recent Amstrad machines make a much neater and satisfying package, particularly with the crystal clear green display.

It seems unlikely that any significant new machines will be released without 80 columns, disc drives or the like (MSX take note). With the new generation of 16 bit home machines, there is scope for utility software to completely revolutionise our ideas of what powerful features can be provided at a reasonable price.

Tony Kendle

Program *Tasword* **Micro** Various **Price** £15 **Supplier** Tasman Software, Springfield House, Hyde Terrace, Leeds LS2 9LN

minimum stock levels and work out stock totals.

All of the packages work adequately and the package is a good first buy for new businessmen. There's nothing too fancy and some of the programs are in basic – which restricts file sizes. Nevertheless an excellent first purchase.

Graham Taylor

Wordsmith

Program *Micro Wordcraft* **Price** £24.95 **Micro** Commodore 64 **Supplier** Audiogenic, PO Box 88, Reading Berks

Micro Wordcraft starts off by assuming the user knows nothing not only about wordprocessing but also about the Commodore 64 – a good twelve pages of the manual are taken up with plugging in instructions between the 64, discdrive and printers.

However, that over with, *Wordcraft* loads to a clear, if rather glaring after four hours solid processing, ready-to-go screen.

The use of *Run/Stop* to toggle between Command and Type mode is a good idea, although some of the Commands symbols are slightly obscure. It took me a while to remember I could get a new line with f7 rather than good old *Return*.

It could take quite a lot of word processing before you would feel confident enough to use it without the manual on your lap, but after mastering the commands you need most, their execution is simple and immediate.

Wordcraft defaults to 75 columns, 35 of them scrolling across as you type over the forty mark. Setting the column width to anything else is a simple operation and can be done at any stage. No word count is given, although current column and row number is shown, and the amount of space left.

While whole words are automatically taken over to the next line, you cannot justify text on screen, only as a printer command.

However, on the plus side, most of the attractive features of a word processor are there, block-moving, string searching, insertion in chunks, headers and footers. And, thank goodness, disc formatting, saving and print are all quickly and simply performed. Only someone who has previously used a word processor where all these functions were made practically impossible could appreciate that.

Christina Erskine

Cash in hand

Program *Money Manager* **Price** £14.95 **Micro** Amstrad CPC 464 **Supplier** Connect Systems, 3 Flanchford Road, London W12 9ND

Money management is something I have little experience of – as far as I'm concerned, the folding green stuff just goes in one port and out another.

So I approached this program with some trepidation. Was I going to be buried in forecasts and fringe benefits, and baffled by budgets?

In a word, no. What I found on loading was a clearly laid out, easy to understand program perfect for a tyro like me – a tyro with an Amstrad CPC 464, that is.

The program is menu driven, with 15 options to choose from. You can add, edit or delete entries, sort them by date type or account number; print out monthly or annual statements, presented as pie or bar charts, and save all your data to tape.

Each entry is basically one transaction, and includes date, account number, cheque number, and class – whether rates, electricity, household expenditure, or other.

Another facility allows you to indicate who made a particular payment – the idea, no doubt, is that blame for overspending can be laid at the appropriate door.

The screen display is excellent, although I suspect that anything on the Amstrad would look good. All the displays seem to be well laid out and easy to read.

In a nutshell, *Money Manager* does what it sets out to do, and seems to do it effectively.

Quite whether there is much of an advantage over more traditional aids to mathematical excellence – pencil and paper, for example, or an abacus – I don't know, but if you have a burning desire to harness the power of your micro to the financial chores, then £14.95 seems a fair price to pay.

Hedley Price

Rows and columns

Program *Mastercalc* **Price** £25.00 **Micro** CPC 464/664 **Supplier** Campbell Software Design, 57 Traps Hill, Loughton, Essex, or Amsoft

Another exceptional utility from Campbell for the Amstrad machines

This spreadsheet accomplishes more in Ram than the *Microspread* CP/M utility did on disc

For example, you are allowed room for up to 3000 cells, some six times the number allowed in *Microspread* and each number is stored as 8-byte floating-point giving numbers in the range of +/- *0 0000001 to 9,999,999,999,999 999 Text can be entered anywhere on the sheet, and there is extensive control of column display Columns from different areas of the sheet can be displayed next to each other either on screen or on the printer Alternatively, the screen can be split into two windows which can be manipulated independently.

Campbells have taken great trouble to make the program as easy to use as possible with screen menus, helpful documentation and useful options such as keys to 'repeat last value'. Owners of the colour monitor version Amstrad may also be glad to hear that the 40-column mode can be used as well as 80-column, whilst a printer width of up to 240 columns is allowed. For graphic displays up to three variables can be presented at a time in a histogram on screen with automatic scaling and raised baselines to accomodate negative values

Such careful thought and close attention to detail we have come to expect from this company – but there is one weak point. The formula options that have been included are disappoinngly few essentially only add, subtract, multiply and divide. It seems unnecessary to limit the scope of applications of such a sheet, particularly with its high precision, by ommiting options such as *Log, Sin, Average* etc – even if the vast majority of people will never use them

However, if you know that you will never use them, it's another highly recommended piece of software

Tony Kendle

Records

Program *Micro Magpie* **Price** £39 95 **Micro** Commodore 64 **Supplier** Audiogenic, PO Box 88, Reading Berks

Folklore would seem to have it that a database is only any good as an address book or for secretaries of computer clubs to keep tabs of the membership This is nonsense

There is no danger of forgetting the potential power and versatility of a database with Magpie It includes a sample Mailing list and Stock Control set-up, which you can either use yourself, or adapt to your own needs, or ignore completely It also contains a graph function – albeit a rather primitive one

However, Magpie stands out most among databases, because it uses pseudo-windows and menus, which, though not quite pop-up, perform much the same function. With all procedures being entirely menu driven, it becomes that much easier to find your way around the program and what it can do

Not only can you define your own parameters for a database, and protect them with passwords, but it has a powerful indexing function

Christina Erskine

Code words

Program *First Word* **Price** £35.95 **Micro** Commodore 64 **Supplier** First Publishing Unit 205, Horseshoe Park, Pangbourne, Berks

First Publishing prides itself that with *First Word* the user can get going and word process without spending hours scanning the manual first

This seems to be largely because the manual, which is particularly clear and free of jargon, incidentally, divides itself up into two parts – one rattles though most of what you need to know to get started, but doesn't attempt to touch on Block operations or finding and replacing, while the second half of the manual concentrates on more sophisticated functions

The program depends very much on control codes rather than 'what-you-see-is-what-you-get', so your document does tend to be rather cluttered with little arrows and blobs indicating various positions and formats when it finally gets printed out. A little confusing.

The program operates in three modes – *Write*, for typing, *Command*, for editing, and *Menu*, for the disc drive and printer This means that the screen is relatively uncluttered and clear You are also given the option to change colours at the beginning of the program

Christina Erskine

Money monitor

Program *The Investment Monitor* **Price** £12 *(inc P&P)* **Micro** Spectrum 48K **Supplier** *Michael Slatford Software, 3 Campden Road South Croydon, Surrey CR2 7EQ*

Yipes A program for the Spectrum which not only isn't a game, but could even be quite useful – or at any rate might exercise the mind.

Michael Slatford Software have devised an ingenious utility program What it does is to act as a glorified card index It allows you to keep individual and collective detailed records of purchases of different types of investments

Each investment gets its own 'card' (up to fifty can be created) Automatic prompts help you to fill in the necessary details – date of purchase, quantity purchased, price, etc The program then tracks the highest/lowest prices achieved (provided you put the information in of course – though that's readily available from papers like the Financial Times), a realisation value (adjusted for the approximate costs of sale) and calculate the gain or loss in both real and percentage terms

```
1.          CARD OPTIONS

UNIT TRUSTS
Accumulation Units ....... 1
Income Units ............. 2
Reinvestment Units ....... 3

INVESTMENT BONDS
No Withdrawals ........... 4
Regular Withdrawals ...... 5

REGULAR INVESTMENT
into Units or Bonds ...... 6

ORDINARY SHARES .......... 7

GILTS .................... 8

    PRESS APPROPRIATE KEY
```

In operation it is extremely simple and easy to use. Both cassette and microdrive (a new refinement) storage are possible

But, I hear you cry, how is this relevant to me – I'm not abut to become a Stock Exchange wheeler dealer? Well, it may not be designed as a game, but there's no reason at all why you couldn't invest an imaginary investment portfolio and use it as one

And, anyway, this, so the Government keeps telling us, is the dawn of the age of wider share ownership (ie ordinary people like you and me owning shares rather than it just being the big institutions, like the pension funds) – after all someone has to mop up all those extra shares created by it current scramble to privatise everything in sight! And maybe the success of the British Telecom floatation proves it is right.

Cal Counsell

Cross-references

It's strictly down to business on the CBM 64 with Spreadsheet by ***John Cochrane***

Simplespread is, as its name suggests, a simple general purpose spreadsheet program. Although simple in concept you can see that the program is quite lengthy, but worth typing.

The best way to get to know what can and can't be done on a spreadsheet is simply to spend some time playing around with it.

Inputs are indicated by pressing a single key. For example pressing H leads to *'Heading('* being printed to screen and you can then type in up to eight characters of text: the heading (or formula, or number) is entered by entering a ')'. *Return* is generally ignored and cannot be used to enter data onto the spreadsheet, although some specific requests for input may require it.

The *Inst/Del* key should *not* be used when entering data as the program has all sorts of problems trying interpret the final cell contents. Cursor left will erase characters from the entry line in order to make corrections whilst entering formulae, headings, and numeric data.

Do not enter ',' or ';' (comma or semi-colon) into a cell heading, number (see below for entering comments into numerical data), or formula because these cause confusion during save and load operations and you will lose data.

Do not use the colour controls for the same reason.

The symbols '+', '−', '*', and '/' are supported for entry into formulae. The formulae are interpreted from left to right. You should be careful that these are set up in the correct order.

The format *'C(N,NM)'* should be used from within a formula to refer to the numerical contents of other cells, where *n* is the column letter and *NM* is the row number. The program will accept a single digit for *NM* but it is recommended that a double digit number (eg, 06)— be used if the formula is likely to be copied to other cells.

When entering numerical data, the program stores the data both as a string (on input) and as the numerical value of that string. Avoid entering useless data into the string (eg, use '45' rather than '45.00') in order to save memory. If you are not worried about running out of memory then it is possible to use the numerical data entry to store comments. For example, *Num(38 25-24 July.Mr Grab)* will enter a numerical value of 38.25 but will also perhaps remind you that the money is to be paid to Mr Grab by 24 July.

Although I have tried to cover most situations, the program is not entirely foolproof. For example, if you attempt to C(opy) a formula to the current cell (the cell highlighted by the cursor) you will lose the formula; if you C(opy) to a cell using a negative row number the program will stop with an error, and so on.

Program Notes

Briefly, the functions of the routines used in Simplespread are as follows:

SETUP: Dimensions arrays F$() and N() to hold formulae and numbers for each cell in the spreadsheet. At present the number of cell rows is limited to a maximum (RM) of 25. Two points to note: the memory requirement for F$ will vary depending on the number of cells actually used, and long formulae will use up lots of memory, hence a strict limitation on RM cannot really be defined. Once data is entered, RM cannot be changed and so you must keep a careful note of RM if you decide to increase it – data saved with one value for RM must be reloaded to the same value.

WAIT: The main control routine. Waits for an input and acts appropriately by calling the relevant subroutine.

GETKEY: Waits for a key to be pressed. Ignores *Return*.

DISPLAY: A collection of subroutines which produce the screen display or modify the existing display. *VD* holds the vertical position for the current cell (marked by inverse cell) and *LR* holds the horizontal position. *F$* is a string used for displaying the cell contents (either a number or a text heading).

N(C,R): This routine works through *F$(C,R)*, for given cell and calculates a numerical value to be stored in *N(C,R)*.

NEXT.F$(): Decodes any formula held in *F4()* an element at the time and calculates a numerical value, *CC*, for the next identifiable element.

FORMULA: Controls the entry of numerical data, headings, or formulae. Formulae are not evaluated as they are entered.

COPY: Allows a formula from one cell to be copied into another and maintains the relative relationship of any references in the formula to other cells.

EXECUTE: Goes through each of the formula in turn and calculates a numerical result.

LOAD/SAVE: Controls the transfer of data to and from tape and disc.

INSTRUCT: Displays a list of the accepted inputs.

QUIT: Clears the spreadsheet.

VARIABLES: Describes the program variables.

This program is taken from *Simulation Techniques on the Commodore 64* by John Cochrane, published by Sunshine Books at £6.95.

```
10 REM (INITIALISE VARIABLES ETC
20 REM-------------------------
30 POKE 650,1 REM KEYBOARD BUFFER=1
40 RM=20 REM MAX NO. OF ROWS
50 DIM F$(26,RM),N(26,RM)
60 CD$="" CR$="" CL$="" SS=""
70 FOR N=1 TO 40
80 CD$=CD$+"[CD]"
90 CR$=CR$+"[CR]"
100 CL$=CL$+"[CL]"
110 SS=SS+" "
120 NEXT N
130 BL$="[HOME]"+LEFT$(CD$,23)-SS+CL$
140 IF="T[CU][CD][CL][CR]FRNCXLSEQ"
150 C=R 0=1 LR=1 UD=1
160 GOSUB 3430 REM DISPLAY SPREADSHEET
170 PRINT BL$;"PRESS I=INSTRUCTIONS ELSE
CONTINUE"
180 GOSUB 2000 REM GET T$
190 IF T$="I" THEN GOSUB 11000:GOTO 170
1000 REM------WAIT-----------------
1010 REM WAIT FOR COMMAND & ACT
1020 REM---------------------------
1030 PRINT BL$;"INPUT?"
1040 GOSUB 2000:REM GET T$
1050 I=0
1060 I=I+1
1070 IF T$=MID$(I$,I,1) THEN GOTO 1090
1080 IF I<15 THEN GOTO 1060
1090 IF I>3 THEN GOTO 1150
1100 ON I GOSUB 3030,3100,3220,3290,3360
,3000,7000,7000
1110 GOTO 1030
1120 J=I-8
1130 ON J GOSUB 8000,9000,10000,10000,11
000,12000
1150 GOTO 1030
2000 REM------GETKEY---------------
2010 REM WAIT FOR KEYPRESS
2020 REM---------------------------
2030 GET T$
2040 GET T$:IF T$="" THEN GOTO 2040
2050 IF T$=CHR$(13) THEN GOTO 2040
2060 RETURN
3000 REM------DISPLAY--------------
3010 REM MOVE TO NEW CELL AND DISPLAY
3020 REM---------------------------
3030 REM MOVE TO CELL C R
3040 PRINT BL$;
3050 INPUT "INPUT COLUMN ADDRESS FOR MOV
E";T$
3060 IF ASC(T$)<65 OR ASC(T$)>90 THEN GO
TO 3050
3070 C=ASC(T$)-64
3080 PRINT BL$
3090 INPUT "ROW ADDRESS FOR MOVE";R
3100 IF R>RM THEN GOTO 3080
3110 UD=1:IF R>RM-18 THEN UD=20-(RM-R)
3120 LR=1:IF C>23 THEN LR=C-22
3130 GOSUB 3430
3140 RETURN
3150 REM CURSOR UP
3160 IF R=1 THEN RETURN
3170 GOSUB 3770:GOSUB 3810:GOSUB 3850
3180 R=R-1
3190 UD=UD-1:IF UD=0 THEN UD=1:GOSUB 343
0:RETURN
3200 GOSUB 3770:GOSUB 3810:GOSUB 3850:GOS
UB 3730
3210 RETURN
3220 REM CURSOR DOWN
3230 IF R=RM THEN RETURN
3240 GOSUB 3770:GOSUB 3810:GOSUB 3850
3250 R=R+1
3260 UD=UD+1:IF UD=21 THEN UD=20:GOSUB 3
430:RETURN
```

```
3270 GOSUB 3770 GOSUB 3810 GOSUB 3888 : GOSUB 3720
3280 RETURN
3290 REM CURSOR LEFT
3300 IF C=1 THEN RETURN
3310 GOSUB 3770 GOSUB 3810 GOSUB 3860
3320 C=C-1
3330 LR=LR-1:IF LR=0 THEN LR=1:GOSUB 343
0:RETURN
3340 GOSUB 3770:GOSUB 3810:GOSUB 3690 GO
SUB 3720
3350 RETURN
3360 REM CURSOR RIGHT
3370 IF C=26 THEN RETURN
3380 GOSUB 3770 GOSUB 3810:GOSUB 3860
3390 C=C+1
3400 LR=LR+1:IF LR=6 THEN LR=6:GOSUB 343
0:RETURN
3410 GOSUB 3770 GOSUB 3810:GOSUB 3690 GO
SUB 3720
3420 RETURN
3430 REM REDRAW FULL DISPLAY
3440 CX=C RX=R
3450 SC=C-LR+1:SR=R-UD
3460 PRINT "[CLR]"
3470 PRINT "    ", REM 4 SPACES
3480 FOR N=SC TO SC+3
3490 PRINT "    ";CHR$(N+64);"    ";:REM
 4 SPACES
3500 NEXT N
3510 FOR N=SR TO SR+19
3520 C1=INT(N/10)
3530 PRINT " " CHR$(C1+48);CHR$(N-10*C1+
48);" "
3540 FOR M=0 TO 3
3550 C=SC+M:R=N GOSUB 3770:GOSUB 3690
3560 NEXT M NEXT N
3570 GOSUB 3810
3580 C=CX R=RX
3590 GOSUB 3770 GOSUB 3800:GOSUB 3720
3600 RETURN
3610 REM SCREEN CURSOR TO CURRENT CELL
3620 PRINT "[HOME]"
3630 PRINT LEFT$(CD$ UD);
3640 PRINT LEFT$(CR$ 9*LR 9)
3650 RETURN
3660 REM DISPLAY CURRENT CELL -NORMAL--
3670 PRINT P$
3680 RETURN
3690 REM DISPLAY CURRENT CELL  R VIDEO
3700 PRINT "[RVS]",P$;"[RVO]"
3710 RETURN
3720 REM PRINT CONTENTS
3730 PRINT "[HOME]" LEFT$(CD$ 21);
3740 PRINT BO CL$ "CURRENT CELL =" CHR$(
C+64) " " R " CONTAINING "
3750 PRINT BO;CL$ F$(C R)
3760 RETURN
3770 REM SET P$ FOR CURRENT CELL
3780 IF LEFT$(F$(C,R) 1)="H" THEN GOSUB
3870 GOTO 3960
3790 IF LEFT$(F$(C,R) 1)="N" THEN GOSUB
6240
3800 IF N(C R)<0 THEN P$=LEFT$(B$,6):GOT
0 3960
3810 P$=""
3820 NG=0:IF N(C,R)<0 THEN NG=1 N(C R)=-
N(C R)
3830 N1=INT(1000*N(C R)+.5)
3840 N1=INT(N1/10)
3850 N2=N1-10*INT(N1/10)
3860 IF N2=0 THEN N2= 10
3870 P$=CHR$(N2 48)+P$
3880 IF LEN(P$)=2 THEN P$="."+P$
3890 IF LEN(P$)<6 THEN GOTO 3840
3900 IF N1<10 THEN GOTO 3940
3910 IF N1>10000 THEN P$="OVERFLOW":GOTO
 3960
3920 P$=LEFT$(P$ 1)
3930 GOTO 3840
3940 IF NG=1 THEN P$="-"+P$ N(C R)=-N(C,
R) NG=0 GOTO 3960
3950 P$=" "+P$
3960 RETURN
3970 REM HEADING-6 CHARACTERS LONG
3980 P$=MID$(F$(C R) 2 6)
3990 P$=LEFT$(P$ LEN(P$)-1)
4000 IF LEN(P$)<6 THEN P$=P$+" ":GOTO 40
00
4010 RETURN
6000 REM<---------N(C R)--------------->
6010 REM DECODE F$(C R) TO GIVE N(C,R)
6020 REM-------------------------------
6030 T$=LEFT$(F$(C R) 1)
6040 IF T$="F" THEN GOSUB 6260 GOTO 6070
6050 IF T$="" OR T$="H" OR T$=" " THEN G
OSUB 6300:GOTO 6070
6060 GOSUB 6080
6070 RETURN
6080 REM CALCULATE F$(  )
6090 N(C R)=0
6100 L1=LEN(F$(C R))
8120 F=3
8130 GOSUB 6000
8136 IF E1<>0 THEN GOSUB 8320:GOTO 8230
8140 N(C R)=CC
8150 F1=F1+1 IF F1>L1 THEN GOTO 8230
8160 Y$=T$:GOSUB 8000
8170 IF E1<>0 THEN GOSUB 6320 GOTO 6230
8180 IF Y$="+" THEN N(C R)=N(C R)+CC
8190 IF Y$="-" THEN N(C R)=N(C R)-CC
8200 IF Y$="*" THEN N(C R)=N(C R)*CC
8210 IF Y$="/" THEN N(C R)=N(C R)/CC
6220 GOTO 6150
6230 RETURN
6240 REM CALCULATE NUM(   )
6250 L1=LEN(F$(C R))
6260 X$=MID$(F$(C R) 3 L1-6)
6270 N(C R)=VAL(X$)
6280 RETURN
6290 REM F$(C R) BLANK OR HOLDS HEADING
6300 N(C R)=0
6310 RETURN
6320 REM ERROR IN F$(C R)
6330 LR=1 UD=1 GOSUB 3430
6340 PRINT "[HOME]" LEFT$(CD$ 21)
6350 PRINT BO,CL$ "ERROR AT CURRENT CELL
 =" CHR$(C+64) " " R " CONTENTS:"
6360 PRINT BO;CL$,F$(C,R)
6370 RETURN
8000 REM<---------NEXT F$()------------>
8010 REM GET NEXT ELEMENT OF F$(C R)
8020 REM-------------------------------
8030 E1=0
8040 T$=MID$(F$(C R) F) 1)
8050 IF T$="C" THEN GOSUB 8190 GOTO 8070
8060 X$=T$ GOSUB 8080
8070 RETURN
8080 REM GET VALUE OF NUMERIC ELEMENT
8090 F1=F1+1 IF F1>L1 THEN E1=1:GOTO 817
0
8100 T$=MID$(F$(C R) F1 1)
8110 IF ASC(T$)>48 AND ASC(T$)<58 THEN G
OTO 8140
8120 IF T$="." OR T$="/" THEN GOTO 8180
8130 IF ASC(T$)<48 OR ASC(T$)>57 THEN E1
=1 GOTO 8170
8140 X$=X$+T$
8150 GOTO 8090
8160 CC=VAL(X$)
8170 RETURN
8180 REM GET CELL ADDRESS AND CONTENTS-
8190 F1=F1+2 IF F1>L1 THEN E1=1 GOTO 835
0
8200 T$=MID$(F$(C R),F1 1)
8210 IF ASC(T$)<65 OR ASC(T$)>90 THEN E1
=1 GOTO 8350
8220 N1=ASC(T$)-64
8230 F1=F1+2 IF F1>L1 THEN E1=1:GOTO 835
0
8240 T$=MID$(F$(C R),F1,1)
8250 F1=F1+1 IF F1>L1 THEN E1=1 GOTO 835
0
8260 X$=MID$(F$(C R) F1 1)
8270 IF X$=")" THEN GOTO 8300
8280 T$=T$+X$
8290 GOTO 8250
8300 N2=VAL(T$)
8310 IF N2<1 OR N2>99 THEN E1=1:GOTO 835
0
8320 CC=N(N1,N2)
8330 F1=F1+1
8340 T$=MID$(F$(C,R),F1,1)
8350 RETURN
7000 REM<---------FORMULA-------------->
7010 REM ENTER FORMULA AT CURRENT CELL
7020 REM-------------------------------
7030 J=0
7040 IF I=6 THEN X$="F(":LB=39
7050 IF I=7 THEN X$="NUM(" LB=39
7060 IF I=8 THEN X$="HEADING(" LB=10
7070 PRINT BL$ X$
7080 GOSUB 2000 REM GET T$
7090 IF T$="C" AND I=6 THEN J=1
7100 IF T$="(" THEN X$=X$+T$ GOTO 7140
7110 IF T$="[CL]" THEN GOTO 7140
7120 IF LEN(X$)<LB THEN X$=X$+T$
7130 GOTO 7070
7140 REM DELETE 1 CHARACTER
7150 IF I=6 AND RIGHT$(X$ 1)=")" THEN J=
1
7160 X$=LEFT$(X$ LEN(X$) 1)
7170 GOTO 7070
7180 REM CHECK FOR END
7190 IF I<>6 OR J=0 THEN GOTO 7200
7200 J=0
7210 GOTO 7070
7220 REM RESET DISPLAY & RETURN-
7230 F$(C R)=X$ GOSUB 3770
7240 GOSUB 3810:GOSUB 3690:GOSUB 3720
7250 RETURN
8000 REM<---------COPY---------------->
8010 REM COPY FORMULA TO NEW CELL
8020 REM-------------------------------
8030 Y1=0
8040 REM GET COLUMN
8050 PRINT BL$
8060 INPUT "COPY FORMULA TO CELL COLUMN"
T$
8070 IF ASC(T$)<65 OR ASC(T$)>90 THEN GO
TO 8000
8080 CX=ASC(T$) 64
8090 REM GET ROW
8100 PRINT BL$
8110 INPUT "ROW" RX
8120 IF RX>RM THEN GOTO 8090
8130 REM COPY F$() IF NOT FORMULA
8140 T$=LEFT$(F$(C R) 1)
8150 IF T$<>"F" THEN F$(CX RX)=F$(C,R):G
OTO 8250
8160 REM COPY F$ CHAR BY CHAR
8170 F$(CX RX)=T$
8180 L1=LEN(F$(C R)) F1=2
8190 T$=MID$(F$(C R) F1 1)
8200 IF T$="C" THEN GOSUB 8260
8210 IF E1<>0 THEN GOSUB 6320 GOTO 8250
8220 F$(CX RX)=F$(CX RX)+T$
8230 F1=F1+1
8240 IF F1<=L1 THEN GOTO 8190
8250 RETURN
8260 REM CHANGE CELL REFERENCES
8270 GOSUB 8180
8280 IF E1<>0 THEN GOTO 8380
8290 F1=F1-1
8300 N1=N1-CX C N2=N2-RX R
8310 T$="C("+CHR$(N1+64)+" "
8320 X$=""
8330 N1=N2 10*INT(N2/10)
8340 X$=CHR$(N1+48)+X$
8350 N2=INT(N2/10)
8360 IF N2>0 THEN GOTO 8330
8370 T$=T$+X$+")"
8380 RETURN
9000 REM<---------EXECUTE-------------->
9010 REM RE CALCULATE FULL SPREADSHEET
9020 REM-------------------------------
9030 PRINT BL$;"THINKING   PLEASE WAIT"
9040 CR=C RR=R E1=0
9050 FOR R=1 TO RM
9060 FOR C=1 TO 26
9070 GOSUB 6000 REM CALC  N(C R)
9080 IF E1<>0 THEN C=26 R=RM
9090 NEXT C NEXT R
9100 C=CR:R=RR
9110 IF E1<>0 THEN I=6 GOSUB 7000 GOTO 9
040
9120 GOSUB 3430 REM DISPLAY SHEET
9130 RETURN
10000 REM<---------LOAD/SAVE----------->
10010 REM LOAD/SAVE TO TAPE/DISK
10020 REM------------------------------
10030 PRINT "[CLR]" LEFT$(CD$ 10)
10040 PRINT "PRESS 1 WHEN USING TAPE"
10050 PRINT "       2 FOR DISK (DEV=8)"
10060 PRINT "       3 TO QUIT NOW"
10070 GOSUB 2000 REM GET T$
10080 XI=ASC(T$) 48
10090 IF XI=3 THEN GOTO 10410
10100 IF XI<1 OR XI>2 THEN GOTO 10070
10110 XI=INT(XI+2 5*(J-3))
10120 PRINT "[CLR]" LEFT$(CD$,5);LEFT$(C
R$ 7)
10130 PRINT "ENTER NAME OF DATA-FILE"
10140 IF XI=1 THEN PRINT "[RVS]RETURN[RV
O] WILL LOAD FIRST FILE ON TAPE"
10150 PRINT LEFT$(CD$ 2) INPUT X$
10160 IF T$="" AND XI<>1 THEN GOTO 10120
10170 ON XI GOSUB 10440 10470 10500 10720
10180 IF E1<>0 THEN GOTO 10410
10190 IF XI>2 THEN GOTO 10300
10200 REM LOAD DATA
10210 FOR C=1 TO 26
10220 FOR R=1 TO RM
10230 INPUT#1 F$(C R)
10240 INPUT#1 N(C R)
10250 NEXT R:NEXT C
10260 CLOSE 1
10270 IF XI=2 OR XI=4 THEN CLOSE 15
10280 C=1 R=1:LR=1:UD=1
10290 GOTO 10470
10300 REM SAVE DATA
10310 CR=C RR=R
10320 FOR C=1 TO 26
10330 FOR R=1 TO RM
10340 IF F$(C R)="" THEN F$(C,R)=" "
10350 PRINT#1 F$(C R)
10360 PRINT#1 N(C,R)
10370 NEXT R NEXT C
10380 CLOSE 1
10390 IF XI=2 OR XI=4 THEN CLOSE 15
10400 C=CR:R=RR
10410 REM RESTORE AND RETURN
10420 GOSUB 3430 REM DISPLAY SHEET
10430 RETURN
10440 REM OPEN INPUT CHANNEL FROM TAPE
10450 PRINT "[CD][CD]WIND ON TAPE AS OES
```

```
IRED"
10460 PRINT "THEN PRESS [RVS]RETURN[RVO]"
10470 GET T$ IF T$<>CHR$(13) THEN GOTO 1
0470
10480 EI=0
10490 OPEN 1,1,0,X$
10500 RETURN
10510 REM OPEN INPUT CHANNEL FROM DISK -
10520 PRINT "[CD][CD]PUT CORRECT DISK IN
 DRIVE"
10530 PRINT "THEN PRESS [RVS]RETURN[RVO]"
10540 GET T$ IF T$<>CHR$(13) THEN GOTO 1
0540
10550 T$=X$+",S R"
10560 OPEN 15 8 15
10570 OPEN 1 8 2 T$:GOSUB 10820
10580 IF EI=0 THEN GOTO 10640
10590 PRINT LEFT$(CD$ 8)
10600 PRINT "PRESS R TO RETRY"
10610 PRINT "ANYTHING ELSE ABORTS"
10620 GOSUB 2090 REM GET T$
10630 IF T$="R" THEN GOTO 10510
10640 RETURN
10650 REM OPEN OUTPUT CHANNEL TO TAPE
10660 PRINT "[CD][CD]RIGHT ON TAPE AS USE
IRED"
10670 PRINT "THEN PRESS [RVS]RETURN[RVO]"
10680 GET T$ IF T$<>CHR$(13) THEN GOTO 1
0680
10690 EI=0
10700 OPEN 1 1,1,X$
10710 RETURN
10720 REM OPEN OUTPUT CHANNEL TO DISK---
10730 PRINT "[CD][CD]PUT CORRECT DISK IN
 DRIVE"
10740 PRINT "THEN PRESS [RVS]RETURN[RVO]"
10750 GET T$ IF T$<>CHR$(13) THEN GOTO 1
0750
10760 T$=X$+" S W"
10770 OPEN 15,8 15
10780 OPEN 1 8 2 T$:GOSUB 10820
10790 IF EI=0 THEN GOTO 10910
10800 PRINT LEFT$(CD$ 8)
10810 PRINT "PRESS R TO RETRY"
10820 PRINT "ANYTHING ELSE ABORTS"
10830 PRINT "R WILL OVERWRITE IF FILE EX
ITS"
10840 GOSUB 2090 REM GET T$
10850 IF T$<>"R" THEN GOTO 10900
10860 IF EI<>63 THEN GOTO 10900
10870 PRINT#15 "S0 "+X$
10880 CLOSE 1:CLOSE 15
10890 PRINT "[CLR]"
10900 GOTO 10720
10910 RETURN
10920 REM CHECK DISK ERROR STATUS
10930 INPUT#15 EI EM$
10940 IF EI<20 THEN EI=0 GOTO 10980
10950 PRINT "[CLR][RVS]DISK ERROR"
10960 PRINT LEFT$(CD$ 6) "ERROR NUMBER" EI
10970 PRINT EM$ "[RVO]"
10980 RETURN
11000 REM---------INSTRUCT--------------
11010 REM DISPLAY INSTRUCTIONS
11020 REM-------------------------------
11030 PRINT "[CLR] [RVS]INSTRUCTIONS[RVO]"
11050 PRINT "[CD]THE FOLLOWING INPUTS AR
E ALLOWED "
11060 PRINT "[CD][CD]T   MOVE TO ANY DES
IRED CELL"
11060 PRINT "[CD]CURSOR KEYS   MOVE ABOU
ND SPREADSHEET"
11070 PRINT "[CD]F   INPUT FORMULA TO CU
RRENT CELL"
11080 PRINT "[CD]N   INPUT A NUMBER TO C
URRENT CELL"
11090 PRINT "[CD]H   INPUT A HEADING TO
CURRENT CELL"
11100 PRINT "[CD]C   COPY A FORMULA TO A
NOTHER CELL"
11110 PRINT "[CD]X   EXECUTE RE-CALCULA
TE SPREADSHEET"
11120 PRINT "[CD]Q - QUIT  CLEAR THE SPR
EADSHEET"
11130 PRINT "[CD]  PRESS ANY KEY TO CONT
INUE"
11140 GOSUB 2090:REM GET T$
11150 GOSUB 3430:REM DISPLAY SHEET
11160 RETURN
12000 REM--------QUIT-----------------
12010 REM SET UP BLANK SPREADSHEET
12020 REM-----------------------------
12050 PRINT OLD "CLEAR SPREADSHEET   [RV
S]Z[RVO] TO ZAP"
12060 GOSUB 2090:REM GET T$
12060 IF T$<>"Z" THEN GOTO 12120
12060 PRINT "[CLR]NEW SHEET COMING UP"
12070 FOR C=1 TO 26
12080 FOR R=1 TO RM
12090 F$(C R)="" N(C R)=0
12100 NEXT R NEXT C
12110 C=1:R=1 LR=1 UD=1:GOSUB 3430
12120 RETURN
13000 REM--------VARIABLES------------
13010 REM VARIABLES
13020 REM-----------------------------
13030 REM C=COLUMN NO  CURRENT CELL
13040 REM  =1 TO 26 (=A TO Z)
13050 REM CC=NUMERICAL ELEMENT OF F$()
13060 REM CD$=40*"[CD]"
13070 REM CX=TEMPORARY STORE FOR C
13080 REM CR$=40*"[CR]"
13090 REM CL$=40*"[CL]"
13100 REM EI=ERROR INDICATOR (0=OK)
13110 REM EM$=DISK ERROR MESSAGE
13120 REM FL=POS N IN F$() WHEN DECODING
13130 REM F$(C R)=FORMULA FOR CELL C R
13140 REM I=INDICATOR  TYPE OF INPUT/F$
13150 REM I$=HOLDS PERMISSIBLE INPUTS
13160 REM J=")" ENDS F$() IF J=0
13170 REM LI=LENGTH OF F$()
13180 REM LE=MAX  LENGTH F$() ON INPUT
13190 REM LR=CURRENT CELL ON SCREEN
13200 REM   =1 TO 3 FOR LEFT/RIGHT
13210 REM R=LOOP VARIABLE
13220 REM N(C R)=NUMERICAL VALUE OF F$()
13230 REM N1=TEMPORARY VALUE OF C OR R
13240 REM N2=TEMPORARY VALUE OF R OR C
13250 REM NC=INDICATOR FOR  VE N(C R)
13260 REM P$=STRING FOR CELL DISPLAY
13270 REM R=ROW NO  OF CURRENT CELL
13280 REM   =1 TO 75
13290 REM RX=TEMPORARY STORE FOR R
13300 REM RM=MAX NO  ROWS ON SPREADSHEET
13310 REM S$=40*" "
13320 REM SC=TOP LEFT C FOR DISPLAY
13330 REM SLD=CURSOR MOVES ETC  TO WRITE
13340 REM      TO BOTTOM LINE
13350 REM SR=TOP LEFT R FOR DISPLAY
13360 REM T$=KEYBOARD INPUT NO 1
13370 REM UD=CURRENT CELL ON SCREEN
13380 REM   =1 TO 21 FOR UP/DOWN
13390 REM X$=KEYBOARD INPUT NO 2
13400 REM Y$=KEYBOARD INPUT NO 3
```

Processed words

A word processor for Spectrum microdrive users – in just 6K – from **Mike Levers**

W*ordpro* is a simple microdrive based basic/machine code text storage program, capable of handling 990 lines, in under 6K!!

The program consists of 3120 bytes of machine code which handle most functions and 3007 bytes of Basic to deal with I/O. The m/c part is fairly easy to follow due to the fact that it only utilises the simpler functions of the CPU, and calls the resident Rom routines whenever possible.

To enter the program, first type in Program One (bit of a daunting task this) which contains all the data for the m/c program. Do not enter the spaces in the *Data* statements, as they are there for clarity only. Each *Data* line consists of 40 bytes of m/c plus a checksum for error detection. Once typed in, *Run* it and look out for a *"Data OK"* message (which will appear after a few minutes). You can then save the code with *Save *"M",1,"WP CODE"Code 62416,3120*. At this stage it is a good idea to *Save* the loader program as well. Now you're ready to type in the Basic part of *Wordpro*.

Clear the Spectrum with *Print Usr 0* and enter Program Two, ignoring Line Zero. Note that the *"Open#"* in Line 2035 is a token and the *"Next"* is a keyword (you can get this by typing a colon, then the *Next*, and finally moving the cursor left in order to delete the colon). Once complete save the program with *Save *"M",1,"WORDPRO" Line 9900*.

You are now in a position to try the program out. Clear the Spectrum and *Load*"M",1,"WORDPRO"*. After a few seconds you'll either see a menu appear on the screen or the Spectrum will crash! If the latter occurs don't give up, re-Load the m/c loader program and check through the *Data* statements for typing errors – including the checksums.

Assuming the program is up and running you'll obviously want to know what you can do with it. Try pressing the "1" key – you should hear a short beep, then the screen will clear and some information will appear at the base of the display along with a flashing line cursor in the top left-hand corner. The bottom line is the status area. This tells you the current page you're typing on (1 through 45), the caps lock status (On or Off), the cursor direction (a gimmick really but it looks good) and finally the column number the cursor is occupying – useful when typing on a black background as you cannot see the edges of the screen. You can now type anything you like.

The delete, cursor and caps lock keys work as normal, but you cannot use graphics or inverse video. To obtain the copyright symbol use *Symbol Shift* and *I*. Similarly to get ~ \ { } [ ] use *S/Shift* and the appropriate key. *Enter* causes the cursor to jump to the beginning of the next line. When the cursor reaches the bottom right-hand corner of the text area you will hear a long beep indicating that you need to start a new page. This is accomplished by another beep and a short pause while the text is stored in memory. A clean page will then appear. You cannot "delete" the character in the bottom right-hand square of the screen – you must type a *Space* over it. Also there is no auto-repeat on the keys although the *Edit* key (caps shift and one) acts as a repeat button.

If you want to go from page one to, say, page 40, using the cursor keys takes a considerable time, so to speed things up *Option Two* on the menu allows you to skip to a page of your choice. (To return to the menu screen just press both shift keys together.) On selecting this option you will be asked to enter a page number – if you do not wish to change pages (if the option was chosen by mistake) simply enter *L* and the menu will reappear.

Option 3 enables you to dump pages of text to microdrive cartridge. You will be prompted to enter the starting page number, how many pages you wish to save, the filename and lastly the microdrive number. One interesting point to note here is, that if you are updating some text you've just loaded from cartridge and wish to save the new information with the same filename, you can do so without fear of the *"File already exists"* error-message – the program scans the microdrive catalogue and if there is a file with the same name as the one you're Saving it will ask if it is to be deleted. Responding *"N"* will return you to the menu. Again, the *Save* section can be left by entering *L*.

Option 4 – loading from cartridge – is self explanatory.

Selecting *5* on the menu screen will enable you to obtain a hard copy of your text on the ZX printer. Simply enter the start page number and how many pages are to be printed. The printout can be stopped by holding down the *Break* key. It has to be held as the program only scans it after each page is printed.

If you wish to change the screen colour, press *"6"* and a prompt will appear at the base of the screen. Simply select the colour by the appropriate number key. Finally, *Option 7* clears all text from memory (so make sure it is saved first!).

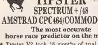
```
PROGRAM ONE
500 CLEAR 62415
510 CLS : RESTORE : LET LINE=1000
520 FOR X=62416 TO 65535 STEP 40
530 LET CHK=0
540 FOR Y=X TO X+39
550 READ Z: LET CHK=CHK+Z: POKE Y,Z
560 NEXT Y
570 READ Z: IF CHK<>Z THEN PRINT "ERROR AT LINE ";LINE: BEEP 2,35: STOP
580 LET LINE=LINE+10
590 NEXT X
600 PRINT "DATA OK": BEEP 3,40: STOP

1000 DATA [illegible]
1010 DATA [illegible]
1020 DATA [illegible]
1030 DATA [illegible]
1040 DATA [illegible]
1050 DATA [illegible]
1060 DATA [illegible]
1070 DATA [illegible]
1080 DATA [illegible]
1090 DATA [illegible]
1100 DATA [illegible]
1110 DATA [illegible]
1120 DATA [illegible]
1130 DATA [illegible]
1140 DATA [illegible]
1150 DATA [illegible]
1160 DATA [illegible]
```

```
1170 DATA [illegible]
1180 DATA [illegible]
1190 DATA [illegible]
1200 DATA [illegible]
1210 DATA [illegible]
1220 DATA [illegible]
1230 DATA [illegible]
1240 DATA [illegible]
1250 DATA [illegible]
1260 DATA [illegible]
1270 DATA [illegible]
1280 DATA [illegible]
1290 DATA [illegible]
1300 DATA [illegible]
1310 DATA [illegible]
1320 DATA [illegible]
1330 DATA [illegible]
1340 DATA [illegible]
1350 DATA [illegible]
1360 DATA [illegible]
1370 DATA [illegible]
1380 DATA [illegible]
1390 DATA [illegible]
1400 DATA [illegible]
1410 DATA [illegible]
1420 DATA [illegible]
1430 DATA [illegible]
1440 DATA [illegible]
1450 DATA [illegible]
1460 DATA [illegible]
1470 DATA [illegible]
1480 DATA [illegible]
1490 DATA [illegible]
1500 DATA [illegible]
1510 DATA [illegible]
1520 DATA [illegible]
1530 DATA [illegible]
1540 DATA [illegible]
1550 DATA [illegible]
1560 DATA [illegible]
1570 DATA [illegible]
1580 DATA [illegible]
1590 DATA [illegible]
1600 DATA [illegible]
1610 DATA [illegible]
1620 DATA [illegible]
1630 DATA [illegible]
1640 DATA [illegible]
1650 DATA [illegible]
1660 DATA [illegible]
1670 DATA [illegible]
1680 DATA [illegible]
1690 DATA [illegible]
1700 DATA [illegible]
1710 DATA [illegible]
1720 DATA [illegible]
1730 DATA [illegible]
1740 DATA [illegible]
1750 DATA [illegible]
1760 DATA [illegible]
1770 DATA [illegible]
```

PROGRAM TWO

```
100 LET IN=VAL "9E3": LET I1=VAL "8100": LET I2=VAL "8150": LET E=VAL "9200"
110 LET OP=USR VAL "(PEEK 65534+256*PEEK 65535)": GO SUB VAL "1E3 *(OP-SGN PI)": GO TO CODE "D"
1000 LET I$="PLEASE ENTER PAGE NUMBER": GO SUB IN: IF K<SGN PI OR K>CODE "-" THEN PRINT #SGN PI; "ERROR - Invalid page number": GO SUB E: GO TO VAL "1E3"
1010 POKE VAL "65535",K: RETURN
2000 LET I$="SAVE FROM WHICH PAGE?": GO SUB IN: LET X=K: IF X<SGN PI OR X>CODE "-" THEN PRINT #SGN PI; "ERROR - Invalid page number": GO SUB E: GO TO VAL "2E3"
2010 LET I$="SAVE HOW MANY PAGES?": GO SUB IN: LET Y=K: IF Y<SGN PI OR Y>CODE "-" THEN PRINT #SGN PI; "ERROR - Invalid number of pages": GO SUB E: GO TO VAL "2010"
2020 IF Y+X-SGN PI>CODE "-" THEN PRINT #SGN PI; "ERROR - Too many pages": GO SUB E: GO TO VAL "2010"
2030 INPUT "FILE NAME? "; LINE F$: IF NOT LEN F$ OR LEN F$>VAL "10" THEN PRINT #SGN PI; "ERROR - Invalid file name": GO SUB E: GO TO VAL "2030"
2035 IF F$="L" OR F$="l" THEN POKE VAL "65534",CODE "OPEN #": POKE VAL "65535",CODE "NEXT ": RUN CODE "d"
2040 LET I$="PLEASE ENTER DRIVE NUMBER": GO SUB IN: LET Z=K: IF Z<SGN PI OR Z>VAL "8" THEN PRINT #SGN PI; "ERROR - Invalid drive number": GO SUB E: GO TO VAL "2040"
2050 PRINT #SGN PI; "INSERT CARTRIDGE INTO DRIVE ";Z: GO SUB I1: INPUT "": PRINT #SGN PI; "ENTER 'RETURN'": IF DRIVE ERROR GO SUB I2: INPUT "": PRINT #SGN PI; "PRESS ANY KEY TO SAVE": BEEP SGN PI,VAL "17": PAUSE SGN PI: PAUSE NOT PI: INPUT "": PRINT #SGN PI; "PLEASE WAIT"
2060 LET L=LEN F$: IF L<VAL "10" THEN FOR K=SGN PI TO VAL "10"-L: LET F$=F$+" ": NEXT K
2070 OPEN #VAL "9";"M";Z; B: ERASE "M";Z; B: INPUT "": PRINT #SGN PI; "PROCESSING": FOR K=VAL "23906" TO VAL "2E4": IF PEEK K=VAL "13" AND PEEK (K+SGN PI)=VAL "13" THEN GO TO VAL "2080"
2080 NEXT K: CLOSE #VAL "9": ERASE "M";Z; B: INPUT "": PRINT #SGN PI; "DRIVE ERROR - PLEASE PRESS A KEY": GO SUB E: PAUSE SGN PI: PAUSE NOT PI: RETURN
2090 LET M=K: LET S=VAL "23838"
2100 IF S>=M THEN GO TO VAL "2040"
2110 LET T$="": FOR K=S TO S+VAL "9": LET T$=T$+CHR$ PEEK K: NEXT K
2120 IF F$=T$ THEN GO TO VAL "2150"
2130 LET S=S+VAL "11": GO TO VAL "2100"
2140 INPUT "": PRINT #SGN PI; "FILE EXISTS, DELETE Y/N?": GO SUB E
2150 LET I$=INKEY$: IF I$<>"y" AND I$<>"Y" AND I$<>"n" AND I$<>"N" THEN GO TO VAL "2150"
2160 INPUT "": IF I$="N" OR I$="n" THEN PRINT #SGN PI; "RETURNING TO MENU": CLOSE #VAL "9": ERASE "M";Z; B: RETURN
2170 ERASE "M";Z;F$( TO L)
2640 INPUT "": PRINT #SGN PI; "SAVING": CLOSE #VAL "9": ERASE "M";Z; B
2650 SAVE *"M";Z;F$CODE VAL "324"+VAL "704"*(X-SGN PI),VAL "704"*Y
2660 INPUT "VERIFY LAST FILE? "; LINE I$: IF LEN I$>SGN PI OR (I$<>"Y" AND I$<>"N" AND I$<>"y" AND I$<>"n") THEN PRINT #SGN PI; "ERROR - Please reply 'Y' or 'N'": GO SUB E: GO TO VAL "2660"
2670 IF I$="n" OR I$="N" THEN RETURN
2680 PRINT #SGN PI; "RETURN IF DRIVE/VERIFY ERROR": GO SUB I1: INPUT "": PRINT #SGN PI; "VERIFYING": VERIFY *"M";Z;F$( TO L)CODE: INPUT "": PRINT #SGN PI; "VERIFY OK": GO SUB I1: INPUT ""
2690 RETURN
3000 INPUT "FILE NAME? "; LINE F$: IF NOT LEN F$ OR LEN F$>VAL "10" THEN PRINT #SGN PI; "ERROR - Invalid file name": GO SUB E: GO TO VAL "3E3"
3005 IF F$="L" OR F$="l" THEN POKE VAL "65534",CODE "OPEN #": POKE VAL "65535",CODE "NEXT ": RUN CODE "d"
3010 LET I$="PLEASE ENTER DRIVE NUMBER": GO SUB IN: LET Z=K: IF Z<SGN PI OR Z>VAL "8" THEN PRINT #SGN PI; "ERROR - Invalid drive number": GO SUB E: GO TO VAL "3010"
3020 PRINT #SGN PI; "INSERT CARTRIDGE INTO DRIVE ";Z: GO SUB I1: INPUT "": PRINT #SGN PI; "RETURN IF DRIVE/LOAD ERROR": GO SUB I2: INPUT "": PRINT #SGN PI; "PRESS ANY KEY TO LOAD": BEEP SGN PI,VAL "17": PAUSE SGN PI: PAUSE NOT PI: INPUT "": PRINT #SGN PI; "LOADING": LOAD *"M";Z;F$CODE: INPUT "": PRINT #SGN PI; "LOAD OK": GO SUB I1: INPUT ""
3030 RETURN
4000 LET I$="PRINT FROM WHICH PAGE?": GO SUB IN: LET X=K: IF X<SGN PI OR X>CODE "-" THEN PRINT #SGN PI; "ERROR - Invalid page number": GO SUB E: GO TO VAL "4E3"
4010 LET I$="PRINT HOW MANY PAGES?": GO SUB IN: LET Y=K: IF Y<SGN PI OR Y>CODE "-" THEN PRINT #SGN PI; "ERROR - Invalid number of pages": GO SUB E: GO TO VAL "4010"
4020 IF X+Y-SGN PI>CODE "-" THEN PRINT #SGN PI; "ERROR - Too many pages": GO SUB E: GO TO VAL "4010"
4030 POKE VAL "23700",X: POKE VAL "23728",Y: RETURN
9000 INPUT (I$); LINE N$: IF NOT LEN N$ THEN GO TO VAL "9E3"
9005 IF N$="L" OR N$="l" THEN POKE VAL "65534",CODE "OPEN #": POKE VAL "65535",CODE "NEXT ": RUN CODE "d"
9010 FOR K=SGN PI TO LEN N$: IF N$(K)<"0" OR N$(K)>"9" THEN PRINT #SGN PI; "ERROR - Invalid input": GO SUB E: GO TO VAL "9E3"
9020 NEXT K: LET K=VAL N$: RETURN
9100 BEEP VAL "2",VAL "20": RETURN
9150 BEEP VAL "5",VAL "21": RETURN
9200 BEEP VAL "2",VAL "20": RETURN
9900 POKE VAL "23609",CODE "7": POKE VAL "23693",CODE "0": BORDER NOT PI: POKE VAL "23624",CODE "0": CLEAR VAL "29999": PRINT AT VAL "10",VAL "9";"WORDPRO BY MIKE LEVERS": LOAD *"m";SGN PI;"UP CODE"CODE VAL "64410",VAL "3120"
9910 RUN SGN PI
```



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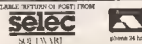
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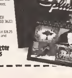


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A number of options

A personal database for BBC disc users brought to you by ***Cy Noble***

When the program is running you are first presented with a menu which invites you to choose one of six options as follows 1) Find an entry 2) Put in a new one 3) Browse 4) Make changes in an entry 5) Print the Xmas list 6) Finish

All of these are selected by number and each option (except six will return you to the menu when its task is completed

The program uses random access filing to read and write files from disc There is extensive prompting incorporated so that anyone can use it once you've got it on disc If you write a small *!Boot* file then the whole thing can be up and running in a few seconds by pressing *Shift/Break*.

Program Notes

The basic idea to grasp is that the files are organised as strings in fixed lengths so that is possible to find them and chop and change them easily Each string is 127 bytes long and occupies half of a disc sector Each sector on the disc takes 256 bytes so you get two records fitting nicely into a sector leaving a remainder of two bytes per sector which the disc needs for pointers

There are two procedures which take care of getting the data from *(Procgetfile)* and writing it to *(ProcPutfile)* the disc, the rest of the program being mainly concerned with organising the data correctly and presenting it comprehensibly on screen

Procinput (lines 1070,1290) does all the string slicing by padding substrings with spaces if they are short (Line 1160) or cutting them down if they are too long (Line 1170) Don't worry, you get told if the string is too long and you are shown the shortened string and given the option of re-typing it or sending it as it is Once the entry is one the disc as one long string it is easy to take it off again and slice it up into its original components This is done appropriately enough by *ProcPrint* at Lines 950,1050

Procfind (Lines 340,470) takes the string you input and uses the *Instr* function to see if your group of letters is contained within any sector, starting from the first one, in the file *names* if it finds one then it is presented on screen for your approval. If you reject it then the procedure continues to search to the end of the file If its not there it tells you so.

The whole program is laid out in fairly easily understood procedures, each of which performs a specific task The first ten lines are not necessary to the program and are there to remind you that a file must be on the disc in the first place in order to read from or write to it

Line 100 and its associated procedure at *Lines 1650 to 1720* can also be left out but you will find them very helpful during the debugging stage and do no harm at all if left in when the program is fully functional

Be especially careful with the punctuation when typing it in. All those commas, apostrophes, semi-colons etc are really commands telling the computer exactly what to do and how to do it

It's always a good idea to use variable names that describe what they do, especially in procedure *names* Then the program more or less explains itself if you need to come back to the rewrite or expand parts of it, as does this one.

The 'Xmas List' option (it could be any targets population) lets you put a flag on each entry in the file so that it will only print those entries on a printer Further more it only prints the first four lines which contain the name and address in the entry Bear this in mind when you are putting in the names and addresses you want on your mailing list, because they will be printed exactly as you entered them originally You are asked for the number of blank lines to put between entries so that it is possible to print the entire list automatically Just make sure to count the number of print lines between the top of one label and the next, subtract four and the remainder is the number of spaces you need This saves me a lot of work come Xmas because a role of labels is fairly cheap

Option one in the main menu asks for a clue and you only need to type a few letters from the entry you want found and within a few seconds the name, address, phone number, etc, will appear on screen. If there's more than one such entry then you can go on to the next one A good tip is to use only capitals for inputting entries Then you won't be puzzled when the computer says *'not in the files'* when you asked for 'FRED' but originally put in 'Fred' Another good tip it to put something descriptive in the 'comments' part of the entry (eg, 'PLUMBER') Then if you need a plumber just type 'PLUMBER' in response to Option One and you can browse through all the plumbers (or whatever) in your database. Yes! that's what it is, a database If you hit 'N' when the program asks if the entry displayed is the correct one, it will go on to the next plumber in the file and so on. Or you can check out all the people you know in Wigan, or Coronation Street or .

One more thing, there is no provision for deleting an entry but you can always overwrite one using the option which allows you to change details in an entry Browse through the file now and then and note the ones you no longer require

If you don't fancy typing the program in I'll supply it on disc (40-track 3" or 5¼") for £7 00 (5¼") or £10 00 (3") Write to me c/o 323 North Circular Rd, London N13 6BJ

```
10REM The first time this program
20REM is used it will crash if no
30REM NAMES file is on the disc.
40REM To create the file for use
50REM type as follows
60REM F=OPENOUT(NAMES):CLOSE#F
70REM Then you have a file on the
80REM disc ready for writing to
90REM and reading from.
100ONERRORPROCerror:CLOSE#0:END
110MODE7:PROCinit:CLS
120PROCTITLE("NAMES, ADDRESSES & PHONE NOS.")
130VDU28,0,24,39,2 REM workspace window
140PROCchoice
150END
160:
170DEFPROCchoice:CLS:PRINT'''CHR$''"A"'"B"'"C"'"D"'"E"'"F"
PROCFL(REM$,18)
180IFZ < 0 OR Z>6 PROCchoice
190change%=0:flag%=0:printer%=0
200IF Z=1 PROCfind(0):PROCchoice
210REM Find a file passes string
220REM to getfile procedure
230IF Z=2 PROCinput(0):PROCchoice
240REM zero in flag=no changes made
250IF Z=3 PROCnetfile:CLS:PRINTTAB(0,10);number;CHR$134;"r
ecords examined"'' :PROCFL(SPACE$,40):PROCchoice
260IF Z=4 PROCinput(1):PROCchoice
270IF Z=5 PROCxmas:PROCchoice
280IF Z=6 VDU26,CLS:PRINTTAB(1,10);CHR$134;"IF YOU'VE MADE
CHANGES TO ENTRIES OR":PRINTCHR$134,"PUT IN NEW ONES THEN P
RESS"+CHR$136+CHR$129;"f1":PRINTCHR$134;"TO COPY DATABASE TO
BACKUP DISC"
290*KEY1*COPY0 1 NAMES|M
300END
310PROCchoice
320ENDPROC
330:
340DEFPROCfind(change%)
350CLS:PRINTTAB(0,5)CHR$131;"Give me a clue & I'll find th
e entry"
360INPUT"find$:TIME=0
```

```
370F=OPENUP("NAMES")
380P=PTR#F:REPEAT
390INPUT#F,file$
400I=INSTR(file$,find$)
410IF I>0 PROCprint(file$,0) ELSE 430
420PRINT''"Type taken "n find it "f(I%/100)" mean"PROCF
L(YN$,10):IF I$="Y" THEN 450
430UNTIL EOF#F
440CLS:PRINT'''''CHR$134;CHR$136;"Not in the files":I=INK
EY(300):GOTO460
450IF change%=1 THEN PTR#F=PTR#F-120:PRINTTAB(0,0)SPC(200)
;TAB(0,14)SPC(240):PRINTTAB(0,0)"Use cursor and copy keys i
f desired"' ENDPROC
460CLOSE#F:PROCchoice
470ENDPROC
480:
490DEFPROCxmas
500CLS:PRINTTAB(0,5)"This program will print all the names"
510PRINT"and addresses of those entries in the"
520PRINT"file which were previously assigned to"
530PRINT"the Xmas list. Only the first four"
540PRINT"lines of the entry are printed."
550PRINT"You will need a number of spaces"
560PRINT"between the bottom of each entry"
570PRINT"and the top of the next :-"
580 PROCFL("Number of blank lines required ?",18)
590blank%=Z:PRINTTAB(0,17)"You want ";Z;" blank lines betw
een entries"
600PROCFL(YN$,23)
610IF NOT(I$="Y" OR I$="Y") THEN CLS:GOTO500
620CLS:PRINT'''CON$''
630PRINT"1) Print one and wait forSPACE BAR"
640PRINT''"2) Paged mode"
650PRINT''"3) Print continuously to end of file"
660PROCFL("Select by number",18)
670pmode=Z
680PRINT''"You selected ";pmode:PROCFL(YN$,23)
690IF NOT(I$="Y" OR I$="Y") THEN 620
700F=OPENUP("NAMES"):REPEAT
710P=PTR#F:INPUT#F,file$
720IF RIGHT$(file$,1)<>"Y" OR RIGHT$(file$,1)<>"y" PROCprint
(file$,1) ELSE 770
730IF pmode=2 THEN 770
740IF pmode=2 THEN VDU14:GOTO770
750IF pmode=3 THEN 770
760PROCFL(SPACE$,18)
770PROCprint(file$,0):UNTILEOF#F
780CLOSE#F
790ENDPROC
800:
810DEFPROCgetfile
820F=OPENUP("NAMES")
830REPEAT:number=number+1
840P=PTR#F:INPUT#F,file$
850PROCprint(file$,0)
860PROCFL("Q to quit(SPACE)to continue",18)
870UNTIL I$="Q" OR EOF#F
880CLOSE#F:VDU3
890ENDPROC
900:
910DEFPROCputfile(put$,change%)
920IF change%=1 THEN 950
930F=OPENUP("NAMES")
940P=PTR#F:PTR#F=EXT#F
950PRINT#F,put$
960CLOSE#F
970ENDPROC
980:
990DEFPROCprint(file$,printer%):CLS
1000name$=MID$(file$,1,25)
1010street$=MID$(file$,26,30)
1020town$=MID$(file$,56,20)
1030county$=MID$(file$,76,20)
1040phone$=MID$(file$,96,15)
1050pref$=MID$(file$,111,15)
1060IF printer%=1 VDU2:PRINT(name$'street$'town$'county$:FO
R Z%=1 TO blank%:PRINT" ":NEXT:VDU3:ENDPROC
1070PRINT''name$'street$'town$'county$'phone$,pref$''CHR$13
1$"XMAS LIST= ";CHR$136;RIGHT$(file$,1)
1080ENDPROC
1090:
1100DEFPROCinput(change%)
1110IF change%=1 THEN B%=9:GOTO 1130
1120B%=0:CLS:GOTO 1140
1130PROCfind(1)
1140file$="":FORA=1TO6
1150I$="Y":PRINTTAB(0,A%+A):SPC(255)
1160PRINTTAB(0,B%+A);CHR$(13);N$(A);
1170INPUTLINE A$(A)
1180IFA=1 L=25 ELSE IFA=2 L=30 ELSE IF A=3 L=20 ELSE IF A=4
L=20 ELSE IF A =5 L=15 ELSE IF A=6 L=15
1190LL=LEN(A$(A)):IF LL<L A$(A)=A$(A)+" ":GOTO1190
1200IFLL>L THEN A$(A)=LEFT$(A$(A),L):PRINTTAB(0,14)"Too lo
ng: shortened it to" A$(A):PROCFL(YN$,18)
1210PRINTTAB(0,16),SPC(120):IF NOT(I$="Y" OR I$="y") THEN 1150
1220NEXT
1230PROCFL(YN$,18):IF NOT(I$="Y" OR I$="y") THEN 1140
1240PRINTTAB(0,18);SPC(120)
1250FOR A=1TO6:file$=file$+A$(A):NEXT
1260PROCFL("Include them in the Xmas list ?(Y/N)",18)
1270PRINTTAB(1,19);"Your answer was ";I$,X%=I$
1280PROCFL(YN$,20):IF NOT(I$="Y" OR I$="y") PRINTTAB(0,18);
SPC(120):GOTO1260
1290file$=file$+X%
1300PROCputfile(file$,change%)
1310IF change%=0 CLS:PROCFL("Any more to put in ? (Y/N)",10
):IF I$="Y" OR I$="y" PROCinput(change%)
1320ENDPROC
1330:
1340DEFPROCTITLE(T$):LOCAL T%:T%=(32-LEN(T$))/2
1350PRINTTAB(T%,0);CHR$141;CHR$132;CHR$157;CHR$133;T$" ";CH
R$156
1360PRINTTAB(T%,1);CHR$141;CHR$132;CHR$157;CHR$133;T$" ";CH
R$156
1370ENDPROC
1380:
1390DEFPROCFL(w$,j%) LOCAL P%,v%
1400P%=LEN(w$):v%=19-INT(P%/2)
1410PRINTTAB(0,j%);SPC(39):
1420VDU31,v%,j%,136,134
1430PRINTw$;:*FX21
1440I$=GET$:Z=VAL(I$)
1450ENDPROC
1460:
1470DEFPROCinit
1480CON$=CHR$134+"COMMANDS AVAILABLE:_"
1490REQ$="which do you require"
1500YN$="Is that correct ? Y/N"
1510SPACE$=CHR$134+"Press space bar to continue"
1520A$=CHR$131+"1) Find a number"
1530B$=CHR$131+"2) Put in a new one"
1540C$=CHR$131+"3) Browse"
1550D$=CHR$131+"4) Make changes to an entry"
1560E$=CHR$131+"5) Print Xmas list"
1570F$=CHR$131+"6) Finish"
1580DIM A$(6),N$(6):file$=""
1590FOR A=1 TO 6:A$(A)=STRING$(30," ")
1600file$=file$+A$(A):NEXT
1610N$(1)="Name:- "
1620N$(2)="Street:- "
1630N$(3)="Town:- "
1640N$(4)="County/postcode:- "
1650N$(5)="Phone :- "
1660N$(6)="Comments:- "
1670ENDPROC
1680DEFPROCerror:ONERROROFF:REPORT:PRINT" AT LINE ";ERL
1690*FX138,0,76
1700*FX138,0,73
1710*FX138,0,83
1720*FX138,0,84
1730A$=STR$(ERL):FORZ%=1TOLEN(A$):A%=138:X%=0:Y%=ASC(MID$(A
$,Z%,1)):CALL&FFF4:NEXT:*FX15
1740*FX138,0,13
1750ENDPROC
```

All accounted for

Get your finances sorted out with this program for the QL

by **David Lawrence**

The object of this program is to allow the user to keep a clear and continuously updated record of a single bank account, the names of payments, their date and the amount, including the ability to specify not only single payments, but recurring expenses or receipts, no matter how irregular the period. The program is designed to deal with an account for the period of one calendar year and will output either to the screen or to a printer

Program Notes

Lines 1070: The array *Payment$* will be used to store the names of payments. *P—Month$* will contain a special string, explained later, which records the months in which the particular payment is made. The numerical array *Amount* will store the amount of each payment and the day of the month on which it is made

Lines 1080-1120: This loop reads the names of the months of the year into the array *Mo$*.

Lines 2000-2330: Standard menu module

Lines 3030-3480. The overall loop which allows the user to confirm or reject the information input

Lines 3070-3200: The program clearly needs to know whether the item is to be paid out or received, debit or credit. This is recorded in the form of the variable *CD* (Credit/Debit), and an appropriate heading placed on the screen.

Line 3230: If the user has specified a debit item ie a payment out of the account, the amount input is multiplied by minus one

Lines 3240-3420: The months in which the payment is to be made are input in response to a series of prompts. For each of the 12 months, a character is added to the temporary string *Rec—M$*. If the payment is to be made in the corresponding month, the character added is a '1', otherwise it is a '0'. The *For* loop beginning at line 3380 prints out the names of the specified months as recorded in *Rec—M$*, so that the user can determine that they are the months intended

Lines 3500-3640: This is the loop which inserts a new item into the main file, in order of day of payment. The technique is a very simple one. Starting with the last entry, the loop compares the day on which the new payment is made with the day of payment of the item in the main file. If the day of payment in the main file is less than the day of payment for the new item, then the new item is inserted in the space following the item in the main file. If the item in the main file has a day of payment after the day of payment for the new item, the loop shifts the existing item one space up the file. In this way, as it scans down the file, it carries a spare line with it until the correct location for the new item is found. Note that this technique means that the first element in the main file, element zero, is always left unused, acting as a buffer so that the loop will always know when the beginning of the data has been reached

Lines 4000-4340. User search module allowing user to see backwards and forwards.

Lines 5000-5100: Standard delete module

Lines 6040-6110: You have already had notice that at some point a decision has to be taken as to where the output of the program is going to be sent — to the screen or to the printer. These lines accomplish the choice. Throughout this module all output is made to channel number 3. What these lines do is decide whether that channel is a line of communication to the screen or to the printer. The printer, as we have seen in earlier programs, is accessed through the *Ser1* port, whereas the screen, when opening a channel, is simply called *Scr—*. Note that, if you do not have a printer connected, you should not try to output data to *Ser1* as you will lock up the QL.

Lines 6250-6290: Provided that the statement is not for the first month, in which case there is no balance to be carried forward, these two loops scan the whole of the payments list once for each month which precedes the month of the statement. In this way, each payment is examined to see whether it is made in any of the preceding months, in which case the appropriate amount is added to the total in *Sum*. By the end of the two loops, *Sum* contains the full total of any changes in the balance since the beginning of the year. (Keeping a complete balance, including any monies which were in the account at the beginning of the year, can be easily achieved by entering the balance from the end of the previous year as a payment on 1st January.)

Lines 6300-6320: An example of the use of the two short modules just entered, which will deal with the print colour and formatting of *Sum*.

Lines 6330-6350: Like the colour characteristics, the *Under* characteristic means nothing to the printer and is only sent when the screen is being used.

Lines 6370-6510: This loop scans through the complete list of payments, while the extended *If* from lines 6380 to 6500 selects only those which have a '1' in the relevant position of the string recording the months in which the payment is to be made. When a payment is to be made in the month specified for the statement, the loop prints out the day, *Amount(I,1)*, the name, *Payment$(I)*, the amount of the

```
1000 REMark ************************
1010 REMark initialise
1020 REMark ************************
1030   PAPER 2 : INK 7
1040   CLS : CLS#0
1050   sum = 0 : PA=0 : space$=fill$(" ",8)
1060   cl$=fill$(" ",37)
1070   DIM payment$(499,15),p_month$(499,11),
       amount(499,1)
1080   RESTORE
1090   DIM mo$(11,9)
1100   FOR i=0 TO 11
1110     READ mo$(i)
1120   NEXT i
1130   INPUT "LOAD FROM MICRODRIVE (Y/N):";Q$
1140   IF Q$="Y" OR Q$="y" THEN recall
1150   DATA "JANUARY","FEBRUARY","MARCH","APRIL",
       "MAY","JUNE","JULY","AUGUST","SEPTEMBER",
       "OCTOBER","NOVEMBER","DECEMBER"

2000 REMark ************************
2010 REMark menu
2020 REMark ************************
2030   REPeat prompt
2040     PAPER 2 : INK 7
2050     CLS
2060     AT 1,15
2070     PRINT "BANKER"
2080     PRINT\\" COMMANDS AVAILABLE:"
2090     PRINT\\,"1) NEW PAYMENTS"
2100     PRINT,"2) EXAMINE/DELETE PAYMENTS"
2110     PRINT,"3) PRINT STATEMENT"
2120     PRINT,"4) SAVE FILE"
2130     PRINT,"5) STOP"
2140     INPUT\\" WHICH DO YOU REQUIRE: ";Z
2150     IF PA=0 AND (Z=2 OR Z=3 OR Z=4)
2160       PRINT\\,"SORRY, NO DATA YET"
2170       T$=INKEY$(-1)
2180       Z=0
```

payment *Amount(I,0)*, and finally the balance the payment produces, obtained by adding the amount to the previous total in *Sum*. Notice that each time a number is to be printed, it is sent to *Colour* and *Format$* to ensure that the correct colour is set and that the number is in the correct format. When output is to the screen, a key must be pressed before each item is displayed – this is to prevent the statement scrolling quickly upwards off the screen if there are too many lines of information.

Lines 7030-7090: *Hard* is the variable which indicates whether printer output is required (hardcopy). This extended *If* will only be acted upon when output is to the screen. The number which is about to be printed is sent to this module, which accepts it under the name *Flag*. If *Flag* is a positive number, the paper colour is set to yellow and the ink to black. If flag is negative, the colour is white ink on red paper. Explanation of the #8 contained in the commands will be kept until the commentary on the following module.

Lines 7110-7160: These lines are acted upon is *Hard* equals 1, indicating that output is to be to the printer. In this case a space is printed in front of positive numbers and a minus sign in front of negative ones.

Line 8030: Since the procedure may be called from within a loop, the loop variable I is declared as a local variable – any changes made to it will not affect its value anywhere else in the program.

Line 8040: The number being sent to the module, *Nn*, is multiplied by 100 to remove any decimal fraction. In addition, since rounding errors were encountered when the module was first used, resulting in figures like 12.99999999999 being produced rather than 13, a tiny decimal fraction is added and then the integer of the resultant number taken – the effect of this is that the correct whole number is always produced.

Lines 8060-8090: Using powers of 10 to divide the number successively, individual digits can be identified. Thus, if the number were 1234 dividing by 10^3 would produce 1. Subtracting the thousand, which has already been analysed, 234 divided by 10^2 produces 2, and so on. Each digit is stored in *N$* as it is extracted. Since the loop runs from 6 to 0 in powers of 10 (1,000 000 to 1), the resulting string will be seven digits long, with leading zeros if the number being worked on is less than 1 000 000.

Lines 8150-8130: The number in *N$* is scanned to see whether it has any leading zeros. If so, they are replaced with spaces.

Line 8180: *N$* is translated back into a number with a decimal fraction by adding a decimal point before the last two characters – in effect, dividing by 100 but doing the operation on a string so that the QL cannot go into scientific notation. In addition, if the original number had no decimal fraction, it will now have '.00' tagged on to the end, ensuring a standardised format. Note, however, that the resultant string can only accurately contain a figure of up to 99 999.99 due to the limitation to seven digits – it could easily be adapted to cope with more than this.

Lines 8150-8160: The module will be used to format two types of numbers, the day of payment and actual cash values. What kind of format it will return for a given number will depend on the value sent in the form of the parameter *Type*.

Lines 9000-9180: Standard date storage module.

Lines 10000-10120: Standard date recall module.

This program is an edited extract from *The Working Sinclair QL* by David Lawrence, published by Sunshine Books at £6.95.

```
2170     END IF
2200     SELect ON Z
2210       ON Z=1 : new_entries
2220       ON Z=2 : search
2230       ON Z=3 : statement
2240       ON Z=4 : store
2250       ON Z=5 : EXIT prompt
2260     END SELect
2270   END REPeat prompt
2280   CLS
2290   AT 10,15
2300   PRINT "BANKER"
2310   AT 12,8
2320   PRINT "CLOSED FOR BUSINESS"
2330   STOP
3000 REMark ************************
3010 DEFine PROCedure new_entries
3020 REMark ************************
3030 REPeat n_prompt
3040     CLS
3050     AT 1,14
3060     PRINT "NEW ITEMS"
3070     REPeat CREDIT
3080       PRINT\\"1) CREDIT"\"2) DEBIT"
3090       INPUT\"WHICH DO YOU REQUIRE: ";CD
3100       IF CD=1 OR CD=2 THEN EXIT CREDIT
3110     END REPeat CREDIT
3120     CLS
3130     AT 1,14
3140     PRINT "NEW ITEMS"
3150     CD=CD-1
3160     IF CD=0
3170       PRINT\"CREDIT ITEM"
3180     ELSE
3190       PRINT\"DEBIT ITEM"
3200     END IF
3210     INPUT\"NAME OF PAYMENT: ";tpay$
3220     INPUT\"AMOUNT: ";tpay
3230     IF CD=1 THEN tpay=tpay*-1
3240     rec_m$=""
3250     FOR i=0 TO 11
3260       AT 11,0
3270       INPUT (mo$(i)&" (Y/N): ");tm$
3280       IF tm$="Y" OR tm$="y"
3290         rec_m$=rec_m$ & "1"
3300       ELSE
3310         rec_m$=rec_m$ & "0"
3320       END IF
3330       AT 11,0
3340       PRINT cl$
3350     NEXT i
3360     AT 11,0
3370     PRINT "TO BE PAYED IN: ";
3380     FOR i=1 TO 12
3390       IF rec_m$(i)="1"
3400         PRINT !mo$(i-1)!
3410       END IF
3420     NEXT i
3430     INPUT\\"DAY OF PAYMENT (0-31): ";day
3440     INPUT\"ARE THESE CORRECT (Y/N): ";T$
3450     IF T$="y" OR T$="Y" THEN EXIT n_prompt
3460     PRINT\"NOT REGISTERED"
3470     T$=INKEY$(-1)
3480   END REPeat n_prompt
3490   count=PA
3500   REPeat loop
3510     IF day>amount(count,1)
3520       payment$(count+1)=tpay$
3530       p_month$(count+1)=rec_m$
3540       amount(count+1,0)=tpay
3550       amount(count+1,1)=day
3560       EXIT loop
3570     END IF
3580     payment$(count+1)=payment$(count)
3590     p_month$(count+1)=p_month$(count)
3600     amount(count+1,0)=amount(count,0)
3610     amount(count+1,1)=amount(count,1)
3620     count=count-1
3630     IF count<0 THEN EXIT loop
3640   END REPeat loop
3650   PA=PA+1
3660 END DEFine new_entries
4000 REMark ************************
4010 DEFine PROCedure search
4020 REMark ************************
4030   count=1
4040   REPeat display
4050     CLS
4060     PAPER 0
4070     BLOCK 440,70,0,0,0
4080     PRINT\"PAYMENT: ";payment$(count)
4090     PRINT "AMOUNT: ";amount(count,0)
4100     PRINT"MONTHS: ";
4110     FOR i=1 TO 12
```

```
4120        IF p_month$(count,i)="1"
4130          PRINT 'mo$(i-1)'
4140        END IF
4150      NEXT i
4160      PRINT\"DAY OF PAYMENT: ";amount(count,1)
4170      PAPER 2
4180      AT 18,0
4190      PRINT " COMMANDS AVAILABLE:"
4200      PRINT\"    'ENTER' > NEXT ENTRY"
4210      PRINT "    'DDD'  > DELETE ENTRY"
4220      PRINT "    '#' THEN NUMBER > MOVE"
4230      PRINT "    'ZZZ'  > QUIT"
4240      INPUT\' WHICH DO YOU REQUIRE: ";Q$
4250      IF Q$="ddd" OR Q$="DDD" THEN remove
4260      IF Q$="zzz" OR Q$="ZZZ" THEN EXIT display
4270      IF Q$="" THEN Q$="#1"
4280      IF Q$(1)="#"
4290        count=count+Q$(2 TO)
4300      END IF
4310      IF count>PA THEN count=PA
4320      IF count<1 THEN count=1
4330    END REPeat display
4340 END DEFine search
5000 REMark ************************
5010 DEFine PROCedure remove
5020 REMark ************************
5030    FOR i=count TO PA
5040      payment$(i)=payment$(i+1)
5050      p_month$(i)=p_month$(i+1)
5060      amount(i,0)=amount(i+1,0)
5070      amount(i,1)=amount(i+1,1)
5080    NEXT i
5090    PA=PA-1
5100 END DEFine remove
6000 REMark ************************
6010 DEFine PROCedure statement
6020 REMark ************************
6030    PAPER 6 : CLS : INK 0
6040    INPUT \\" OUTPUT TO PRINTER (Y/N)";hard$
6050    IF hard$="Y" OR hard$="y"
6060      OPEN #5,ser1
6070      hard=1
6080    ELSE
6090      OPEN #5,scr_
6100      hard=0
6110    END IF
6120    REPeat check
6130      INPUT\" NUMBER OF MONTH (1-12): ";mo
6140      mo=mo-1
6150      IF mo>=0 AND mo<=11 THEN EXIT check
6160    END REPeat check
6170    CLS
6180    PRINT#5,'STATEMENT FOR ";mo$(mo)
6190    sum=0
6200    IF mo>0
6210      FOR J=1 TO mo
6220        FOR i=1 TO PA
6230          IF p_month$(i,J)="1"
6240            sum=sum+amount(i,0)
6250          END IF
6260        NEXT i
6270      NEXT J
6280    END IF
6290    PRINT#5,\" BALANCE C/F: ";
6300    colour sum
6310    PRINT #5,format$(sum,1)
6320    colour 1
6330    IF NOT hard THEN UNDER #5,1
6340    PRINT#5,\'                          ITEM
        TOTAL  \\;
6350    IF NOT hard THEN UNDER#5,0
6360    IF hard THEN PRINT #5," ";
6370    FOR i= 1 TO PA
6380      IF p_month$(i,mo+1)="1"
6390        PRINT #5,format$(amount(i,1),2);" ";
6400        T$=payment$(i) & cl$
6410        PRINT #5,T$(1 TO 15);"  ";
6420        colour amount(i,0)
6430        PRINT #5,format$(amount(i,0),1);" ";
6440        colour 1
6450        sum=sum+amount(i,0)
6460        colour sum
6470        PRINT#5,format$(sum,1)
6480        colour 1
6490        IF hard=0 THEN T$=INKEY$(-1)
6500      END IF
6510    NEXT i
6520    CLOSE #5
6530    AT 18,0
6540      PRINT\"ANY KEY TO RETURN TO MENU"
6550    T$=INKEY$(-1)
6560 END DEFine statement
7000 REMark ************************
7010 DEFine PROCedure colour (flag)
7020 REMark ************************
7030    IF hard=0
7040      IF flag>=0
7050        PAPER #5,6 : INK #5,0
7060      ELSE
7070        PAPER #5,2 : INK #5,7
7080      END IF
7090    END IF
7100    IF hard=1
7110      IF flag>=0
7120        PRINT #5," ";
7130      ELSE
7140        PRINT #5,"-";
7150      END IF
7160    END IF
7170 END DEFine colour
8000 REMark ************************
8010 DEFine FuNction format$ (nn,type)
8020 REMark ************************
8030      LOCal i,n
8040      n=INT(ABS(nn*100)+5E-2)
8050      n$=""
8060      FOR i=6 TO 0 STEP -1
8070        n$=n$ & INT(n/10^i)
8080        n=n-10^i*INT(n/10^i)
8090      NEXT i
8100      FOR i=1 TO 4
8110        IF n$(i)<>"0" THEN EXIT i
8120        n$(i)=" "
8130      END FOR i
8140      n$=n$(1 TO LEN(n$)-2) & "." & n$(LEN(n$)
        -1 TO)
8150      IF type=1 THEN RETurn n$
8160      IF type=2 THEN RETurn n$(4 TO 5)
8170 END DEFine format$
9000 REMark ************************
9010 DEFine PROCedure store
9020 REMark ************************
9030    CLS
9040    AT 1,14 : PRINT "SAVE DATA"
9050    INPUT\\" Name of data file:";file$
9060    tfile$="mdv1_" & file$
9070    DELETE tfile$
9080    OPEN_NEW #8,"mdv1_" & file$
9090    PRINT#8,PA
9100    FOR i=1 TO PA
9110      PRINT#8,payment$(i)
9120      PRINT#8,p_month$(i)
9130      FOR J=0 TO 1
9140        PRINT#8,amount(i,J)
9150      NEXT J
9160    NEXT i
9170    CLOSE#8
9180 END DEFine store
10000 REMark ************************
10010 DEFine PROCedure recall
10020 REMark ************************
10030   CLS
10040   AT 1,14 : PRINT "RECALL DATA"
10050   DIR mdv1_
10060   INPUT\\" Name of data file:";file$
10070   OPEN_IN #8,"mdv1_" & file$
10080   INPUT#8,PA
10090   FOR i=1 TO PA
10100     INPUT#8,payment$(i)
10110     INPUT#8,p_month$(i)
10120     FOR J=0 TO 1
10130       INPUT#8,amount(i,J)
10140     NEXT J
10150   NEXT i
10160   CLOSE#8
10170 END DEFine store
```

Statement of account

Calling all Amstrad users – get your finances sorted out with this program by ***D G Shedden***

Before buying the CPC 464 I used a very comprehensive Spreadsheet program on another well known micro to build up a complete system for recording all my banking transactions I naturally thought the same could be achieved with *Easi Amscalc* but this was certainly not the case. I looked at the various accounting programs available for the Amstrad but was too mean to pay £20 or more for a commercially available package

The next stage was to examine what was available in printed form and I found what appeared to be a suitable program in an excellent book – *The Working Amstrad* – by David Lawrence and Simon Lane. This was very good but not suitable for other than a very basic form of Statement. Nevertheless, this short program was the basis of my Bank Account program which is now 20K (after excluding *Rems*) Despite the length there is more than adequate memory on the computer to hold enough data for normal domestic use. This data can be saved either on tape or disc.

As written the program will hold all transactions for any 12 month period and allows up to 60 entries in each month with up to 20 Standing Orders which can be at any frequency from once every month to once per year. These are automatically posted to the account when due

You are also allowed to identify up to 18 categories of expenditure in which you may be interested, in cumulative amounts through the year This is the amount of information that can be displayed in the text file and does not take a noticeable amount of time for checking entries

A useful feature is the section for reconciliation with the Official Bank Statement How often have you received this dreaded document and think you are much better off than you are because some major expenditure has not yet hit your account?

A printer option is available (if connected) at all relevant stages, but you are not annoyed by being asked for the print option if there is no printer For clarity *Mode 1* is retained for all screen displays but for the *Display Account* Option the full width of the printer is used allowing full entries to be displayed instead of the truncated descriptions in 40 columns The screen display does, however, show debits in red and credits in black

Now off to the keyboard All *Rem* lines can be omitted but please do not be tempted to renumber until the program is complete Each section is a separate subroutine and can be entered in any order If you try out these in turn enter *Goto 20000* to restart or some very strange effects will result.

Next week the program notes plus the remainder of the listing

To save the effort of typing this in I would be pleased to supply a copy on tape on receipt of £3, sent to me at Lomond, The Green, Belchamp St Paul, Sudbury, Suffolk CO10 7BT Please state whether single or multi account version is required. The program is completely compatible with both tape and disc operation

```
1 '*** D G SHEDDEN ***
2 ' ******c.1985*******
5 '*** BANK ACCOUNT VERSION 6 ***
10 OPENOUT"DUMMY"
20 MEMORY HIMEM-1
30 CLOSEOUT
50 POKE 46312,255:MODE 1
60 LOCATE 8,12:PRINT"Is Printer on line (Y/N)
":GOSUB 100:IF z$="Y" THEN pr=1
70 CLS:GOTO 1000
100 z$=UPPER$(INKEY$)
110 IF z$<>"Y" AND z$<>"N" THEN 100
120 RETURN
199 REM *** Check for S.O.s ***
200 IF tem(z,1)>s THEN RETURN
210 IF tem(z,1)=0 OR tem (z,1)=99 THEN RETURN
220 b$(p(z),z)=tem$(z,0):s(p(z),z)=tem(z,0):G
OSUB 350
230 b(p(z),z)=tem(z,1):b$(p(z),z)="S.O. "+tem
$(z,0)+"#":tem(z,1)=0
250 PEN 2:PRINT USING "##";b(p(z),z);:PRINT
TAB(4);LEFT$(b$(p(z),z),LEN(b$(p(z),z))-1);TA
B(30);:PEN 2+(1 AND s(p(z),z)<0):PRINT USING
"#####.##-";s(p(z),z):REM ALL HASHES
260 p(z)=p(z)+1:RETURN
300 CLS #3:PRINT #3, "Press any key to contin
ue"
310 WHILE INKEY$="":WEND:CLS #3:CLS
320 PEN 2:RETURN
349 REM *** CHECK FOR SPECIAL ENTRIES *
350 FOR n=1 TO c1
360 IF b$(p(z),z)=ct$(n) THEN spend(n)=spend(
n)+(s(p(z),z))
370 NEXT:RETURN
400 CLS#3:PRINT#3,"       ****** INVALID ENTR
Y ******":GOSUB 500:RETURN
420 CLS#3:PRINT#3,"    ***** NO DATA ENTERED
YET *****":GOSUB 500:RETURN
480 PEN 3:PRINT#ch, TAB(20-LEN(q$)/2);q$:PEN
2:PRINT#ch:RETURN
460 CLS:CLS#3:INPUT #3,"Which Month (1-12)";q
:zz=q-1:CLS#3:IF zz<0 OR zz>11 THEN GOSUB 400
:GOTO 460
461 z=q-start+(12 AND start>q)
462 IF i=3 THEN RETURN
465 IF p(z)=1 AND z=0 THEN GOSUB 420:RETURN
490 CLS#3:RETURN
500 SOUND 1,100,50,7:SOUND 1,500,50,7:FOR i=1
 TO 1500:NEXT:CLS#3:RETURN
520 PRINT:PRINT:FOR n=0 TO 11:PRINT USING"
##)....&";N+1;:PRINT mo$(n):NEXT
521 INPUT#3,"PLEASE ENTER OPENING MONTH No OF
 A/C ",start:PRINT#3,mo$(start-1);:GOSUB 540
522 IF z$<>"Y" THEN 521
524 INPUT#3,"PLEASE ENTER YEAR eg 1985 ",year
:CLS#3
525 IF year/4=INT(year/4) THEN f=29
526 INPUT #3,"PLEASE ENTER ACCOUNT NAME (MAX
8 CHARS) ",name$:CLS#3
528 file$="!"+LEFT$(name$,8)
530 n$=name$+" "+n$:GOSUB 1050:AC$=n$+" - "
535 n$=mo$(start-1)+STR$(year-1900)+" TO "+mo
$((start-2)+(12 AND start=1))+STR$((year-1900
)+(1 AND start>1)):GOSUB 1050:RETURN
540 PRINT#3,"-Is this correct Y/N ":GOSUB 100
:CLS#3:RETURN
560 ch=0:PRINT#3,"Send Statement to Printer Y
/N":GOSUB 100:pr=1:CLS#3:IF z$="Y" THEN ch=8

590 RETURN
599 REM *** SORT ***
600 CLS#3:PRINT#3 "Please wait a moment - Sor
ting Entries"
620 FOR n=1 TO p(z)
630 IF b(n,z)<=0 THEN b(n,z)=99:b$(n,z)="":s(
n,z)=0
640 NEXT
650 FOR aa=1 TO p(z)
660 f1=0
670 FOR bb=0 TO p(z)-aa
680 IF b(bb,z)<=b(bb+1,z) THEN 730
690 f1=1
700 cc=b(bb+1,z):cc$=b$(bb+1,z):dd=s(bb+1,z)
710 b(bb+1,z)=b(bb,z):b$(bb+1,z)=b$(bb,z):s(b
b+1,z)=s(bb,z)
720 b(bb,z)=cc:b$(bb,z)=cc$:s(bb,z)=dd
730 NEXT
740 IF f1=0 THEN 760
750 NEXT
760 CLS#3:RETURN
899 REM *** VALIDATE DATE ***
900 IF s>f AND zz=1 THEN GOSUB 400:er=1:RETUR
N
910 IF S>30 AND (zz=3 OR zz=5 OR zz=8 OR zz=1
0) THEN GOSUB 400:er=1:RETURN
920 IF s>31 OR s<1 THEN GOSUB 400:er=1:RETURN
930 RETURN
999 REM *** INITIALISATION ***
1000 MODE 1:BORDER 24:INK 1,2:INK 0,24:INK 2,
0:INK 3,6:f=28
1020 WINDOW #3,1,40,24,25:WINDOW #1,1,40,1,2
1030 CLS:PEN #1,1:PEN 2:WINDOW 1,40,4,23
1040 n$="BANK ACCOUNT":GOSUB 1050:GOTO 1080
1050 PRINT#1,TAB(20-LEN(n$)/2);n$:RETURN
1080 DIM a$(20,1),mo$(11),a(20,1):a(0,1)=999:
pa=0
1090 DIM b$(60,11),b(60,11),s(60,11),p(11),bf
wd(12),ct$(18),spend(18)
1130 RESTORE 1170
1140 FOR i=0 TO 11
1150 READ mo$(i):p(i)=1:b$(0,i)="Balance Forw
ard"
1160 NEXT
1165 b$(0,0)="Opening Balance"
```

```
1170 DATA JANUARY,FEBRUARY,MARCH,APRIL,MAY,JUNE
1180 DATA JULY,AUGUST,SEPTEMBER,OCTOBER,NOVEMBER,DECEMBER
1999 REM *** MAIN MENU ***
2000 CLS:CLS#3:PEN 2
2020 q$="MAIN  MENU":GOSUB 440
2030 PRINT"  1) DISPLAY BANK ACCOUNT":PRINT
2040 PRINT"  2) STANDING ORDERS":PRINT
3000 PRINT"  3) INPUT DATA":PRINT
2060 PRINT"  4) EXAMINE/DELETE ENTRIES":PRINT
2070 PRINT"  5) RECONCILIATION MENU":PRINT
2080 PRINT"  6) LOAD DATA FILE":PRINT
2090 PRINT"  7) SAVE DATA FILE":PRINT
2100 PRINT"  8) SPECIAL EXPENDITURE MENU":PRINT
2110 PRINT"  9) INSTRUCTIONS"
2130 INPUT #3, "PLEASE ENTER SELECTION (1 to 9) ",z$:CLS#3
2140 z=VAL(z$)
2150 IF z<1 OR z>9 THEN GOSUB 400:GOTO 2000
2155 ch=0:CLS
2160 IF year=0 AND (z=2 OR z=3 OR z=8) THEN GOSUB 520
2170 ON z GOSUB 3000,10000,8000,6000,4000,9500,9000,12000,15000
2180 ch=0:prc=0:PRINT CHR$(7):GOTO 2000
2999 REM *** DISPLAY STATEMENT ***
3000 er=0:CLS:CLS#3:IF year=0 THEN GOSUB 420:RETURN
3020 IF bfwd(0)<>0 THEN 3060
3030 INPUT#3,"Please enter Opening Balance ",bfwd(0)
3040 GOSUB 540
3050 IF z$<>"Y" THEN PRINT CHR$(7):GOTO 3030
3060 CLS#3
3070 GOSUB 460:GOSUB 620:IF er THEN 3000
3090 CLS:q$="STATEMENT for "+mo$(zz)+STR$(year+(1 AND (z+start)>11)):GOSUB 440
3100 CLS#3:PRINT#3,"  PLEASE WAIT A MOMENT WHILE PREVIOUS     ENTRIES ARE CHECKED"
3110 FOR k=0 TO z:tot=bfwd(k)
3120 FOR l=1 TO p(k)
3130 tot=tot+s(l,k):NEXT
3140 bfwd(k+1)=tot:NEXT:CLS#3:tot=0
3150 PEN 2:PRINT TAB(4);b$(0,z);TAB(30);:PEN 2+(1 AND bfwd(z)<0):PRINT USING "######.##-";bfwd(z):REM "POUND,5 HASHES,DEC,2 HASHES -"
3160 PRINT STRING$(39,"=")
3170 tot=bfwd(z)
3180 FOR n=1 TO p(z)
3190 tot=tot+s(n,z)
3200 l=LEN(b$(n,z))-1:IF l>18 THEN l=18
3210 IF b(n,z)<32 THEN PEN 2: PRINT USING "##";b(n,z);:PRINT TAB(4);LEFT$(b$(n,z),l);TAB(22);:PEN 2+(1 AND s(n,z)<0):PRINT USING "#####.##-";s(n,z);:PRINT TAB(31);: PEN 2+(1 AND tot<0):PRINT USING "##### ##-";tot:PEN 2:REM ALL HASHES
3220 IF n MOD 16=0 THEN GOSUB 300:PRINT q$+"cont":PRINT TAB(31);:PEN 2+(1 AND tot<0):PRINT USING "#####.##-";tot:REM 1st item is pound
3230 NEXT
3240 bfwd(z+1)=tot
3250 PEN 2:PRINT;TAB(31);STRING$(8,"="):PRINT TAB(12);"BALANCE FORWARD = ";:PEN 2+(1 AND tot<0):PRINT USING "######.##-";tot:tot=0:REM 1st item is pound
3260 IF pr=0 THEN GOSUB 300
3270 IF pr THEN GOSUB 560:IF ch=8 THEN GOSUB 3500
3280 ch=0:CLS#3:PRINT#3,"Display Statement for another month Y/N":GOSUB 100:CLS#3
3290 IF z$="Y" THEN 3060
3300 IF z=11 THEN CLS#3:PRINT#3,"This is the last month of your year.  Please note final balance of ";:PRINT#3,USING "#####.##";bfwd(12):FOR n=1 TO 5000:NEXT:REM 1st item is pound
3310 RETURN
3499 REM *** PRINT STATEMENT ***
3500 PRINT#8,TAB(37-((LEN(ac$)+LEN(q$))/2));ac$;q$
3540 PRINT#8 TAB(46);b$(0,z);:PRINT#8,TAB(66);USING "######.##-";bfwd(z):REM 1st item is pound
3550 PRINT#8,STRING$(75,"=")
3560 PRINT#8,TAB(47);"RECEIPTS  PAYMENTS   BALANCE"
3570 tot=bfwd(z)
3580 FOR n=1 TO p(z)
3590 tot=tot+s(n,z)
3600 IF b(n,z)<32 THEN PRINT#8,USING "##";b(n,z);:PRINT#8, TAB(5);LEFT$(b$(n,z),LEN(b$(n,z))-1);TAB((46)+(10 AND s(n,z)<0)):PRINT#8,USING "#####.##-";s(n,z);:PRINT#8,TAB(67);USING "##### ##-";tot:REM all hashes
3610 NEXT
3620 PRINT#8,TAB(67);STRING$(8,"=")
3630 PRINT#8,TAB(30):"Balance Forward";:PRINT#8,TAB(66);USING "######.##-";bfwd(z+1):REM 1st item is pound
3635 FOR n=1 TO 2:PRINT#8:NEXT
3640 RETURN
3999 REM *** RECONCILIATION ***
4000 q$="RECONCILIATION MENU":GOSUB 440:PRINT:PRINT
4020 PRINT" 1) RECONCILE WITH BANK STATEMENT":PRINT
4030 PRINT" 2) DISPLAY ITEMS NOT YET CLEARED":PRINT
4040 PRINT" 3) DISPLAY CLEARED ITEMS":PRINT
4000 PRINT" 4) RETURN TO MAIN MENU"
4060 INPUT #3,"PLEASE ENTER SELECTION (1 to 4)";z$:CLS#3:CLS
4070 z=VAL(z$)
4080 IF z<1 OR z>4 THEN GOSUB 400:GOTO 4060
4090 IF z=4 THEN RETURN
4100 ON z GOSUB 4500,5000,5000
4110 ch=0:GOTO 4000
4499 REM *** RECONCILE ***
4500 GOSUB 460
4520 q$="RECONCILIATION FOR "+mo$(zz)
4530 GOSUB 440
4540 FOR n=1 TO p(z)
4550 l=LEN(b$(n,z))-1:IF l>18 THEN l=18
4560 IF b(n,z)<32 AND RIGHT$(b$(n,z),1)="#" THEN PEN 2: PRINT USING "##";b(n,z);:PRINT TAB(4);LEFT$(b$(n,z),l);TAB(23);:PEN 2+(1 AND s(n,z)<0):PRINT USING "##### ##-";s(n,z);ELSE 4620:REM all hashes
4570 PRINT#3,"Has this entry been cleared (Y/N)":GOSUB 100
4580 b=LEN(b$(n,z))-1:PEN 2
4590 IF z$="Y" THEN b$(n,z)=LEFT$(b$(n,z),b)+"$":PRINT TAB(33);"Clear"
4600 IF z$="N" THEN PRINT TAB(33);"Not Clr"
4610 CLS#3
4620 NEXT
4630 CLS:CLS#3:RETURN
4999 REM *** DISPLAY RECONCILIATION ***
5000 GOSUB 460
5020 IF z=2 THEN q$="UNCLEARED ITEMS FOR "+mo$(zz)
5030 IF z=3 THEN q$="CLEARED ITEMS FOR "+mo$(zz)
5040 GOSUB 440
5000 k=1:rec=0
5060 FOR n=1 TO p(z)
3070 l=LEN(b$(n,z))-1:IF l>18 THEN l=18
5080 IF z=2 THEN IF RIGHT$(b$(n,z),1)="#" THEN GOSUB 5500 ELSE 5130
5090 IF z=3 THEN IF RIGHT$(b$(n,z),1)<>"#" THEN GOSUB 5500 ELSE 5130
5100 k=k+1
5110 IF ch=8 THEN 5130
5120 IF k MOD 17=0 THEN GOSUB 300:GOSUB 440
5130 NEXT
5140 GOSUB 5540:PEN 2
5150 IF ch=0 AND prc=1 THEN 5190
5180 IF pr=0 THEN GOSUB 300:GOTO 5190
5170 PEN 2:IF ch=0 AND prc=0 THEN GOSUB 560 ELSE 5190
5160 IF ch=8 THEN 5020
5190 rec=0:prc=0:k=0:CLS:RETURN
5500 IF b(n,z)<32 THEN PEN 2: PRINT #ch,USING "##";b(n,z);:PRINT #ch,TAB(4);LEFT$(b$(n,z),l);TAB(30);:PEN 2+(1 AND s(n,z)<0):PRINT#ch,USING "#####.##-";s(n,z):REM all hashes
5520 rec=rec+s(n,z)
5530 RETURN
5540 PEN 2:PRINT#ch,TAB(30);STRING$(8,"=")
5950 PRINT#ch, TAB(24);"Total";
5060 PRINT#ch, TAB(30);:PEN 2+(1 AND rec<0):PRINT#ch,USING "#####.##-";rec:REM all hashes
5570 PRINT#ch, TAB(30);STRING$(8,"=")
5080 RETURN
5999 REM *** EXAMINE/DELETE ITEMS ***
6000 GOSUB 460
6020 q$="EXAMINE/DELETE ITEMS FOR "+mo$(zz)
6030 GOSUB 440
6040 q$="COMMANDS AVAILABLE":GOSUB 440
6050 LOCATE 1,10
6060 PEN 1:PRINT"ENTER";:PEN 2:PRINT" For Next Entry":PRINT
6070 PEN 1: PRINT" "Q" ";:PEN 2:PRINT"    To Quit":PRINT
6080 PEN 1:PRINT" "D"";:PEN 2:PRINT" To Delete Entry
6070 LOCATE 1,20:PRINT"DATE DETAILS";TAB(33);"AMOUNT":PEN 2
6100 FOR n=1 TO p(z)
6110 l=LEN(b$(n,z))-1:IF l>25 THEN l=25
6120 CLS#3
6130 IF b(n,z)>31 THEN q$="0":GOTO 6240
6140 PRINT#3,USING "##";b(n,z);:PRINT#3,TAB(5);LEFT$(b$(n,z),l);TAB(32);:PRINT#3,USING "#####.##-";s(n,z)
6150 q$="":INPUT #3,"Please Select 'ENTER', Q or D ";q$
6160 q$=UPPER$(q$)
6180 WHILE q$="D"
6190 FOR j=n TO p(z)
6200 b(j,z)=b(j+1,z):b$(j,z)=b$(j+1,z):s(j,z)=s(j+1,z)
6210 NEXT
6220 p(z)=p(z)-1:q$="Q"
6230 WEND
```

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Tony Bridge's Adventure Corner



Next best thing

Hot on the heels of my mention of the The Adventurer's Club comes the first of the monthly newsletters which will be sent to members

And I'm glad to say that it's an excellent, very informative publication. All that was promised in the original news release has materialised, such as the part-series on writing your own adventure (in the ubiquitous Microsoft), reviews of popular adventures and full (coded in Corner style) solutions to some of the tough ones

One of the adventures available from the Adventurers Club is the new Delta 4 epic, *Bored of the Rings* One of the questions that I'm asked more than any other – apart from easy ones like 'What is the secret of Life, the Universe and Everything' – is 'When is someone going to release the program of *Lord of the Rings*?' Well, we now know that the 'someone' is Melbourne House, which is only fitting after the success they made of *The Hobbit*. That program took many months to complete, and you can bet that *Lord of the Rings* will take as long, if not longer

So, while we're all waiting (and we're all behind you, Melbourne, you'd better make it ultra-mega), why not have a look at Delta 4's opus?

With disarming honesty, Delta 4 admit that they couldn't quite secure the rights to the Tolkian masterpiece, so have "come up with the next best thing".

Anyone who has seen previous Delta 4 adventures, such as *The Holy Joystick* saga, will know what to expect For newcomers, let me just say that *Bored* continues their tradition of fond and keenly-observed pastiches of well-known adventures It's obvious what *Bored* is modelled on, but Delta 4 haven't fallen into the obvious trap of poking easy fun at Tolkien's masterpiece

The program has been constructed by Fergus McNeil using the *Quill* and *Illustrator* – utilities which have, of course, become well-known to adventurers, and which lend an air of familiarity to the proceedings In some programs this can easily become boring, but McNeil is more cunning, and *Bored* does not immediately show its origins. In fact, this kind of program is what I had in mind when, after the *Quill* was first released, I expressed the hope that the adventure-writer would be used in imaginative ways and release the author from the burden of coding

The adventure is large, as befits the subject being in three parts and spread over two tapes – a bonus program is *Sceptical* (after the *Spectacle* program of *Dark Star* fame), and contains a series of almost 100 Prestel like pages, full of silliness, including some very perceptive reviews of computer magazines

But happily, *Bored* is more than just a simple take-off (even though, at one point, a Nasgul appears in a C5) In fact, although the characters all have vaguely Tolkien-like names such as Fordo and Bimbo Faggins, Spam the Gardener and Grandalf, the whole thing can be seen as a good substitute, and stop-gap, for the real thing For a start-off, here is the first screen.

"Fordo stood in the party field under the great tent. Massive amounts of food lay heaped on the groaning tables Hundreds of gate-crashing boggits floundered helplessly under the weight of their bloated stomachs Bimbo stood up on his chair at the far end of the tent The noise quietened down to a dull roar 'My fellow boggits', he began. There was a chorus of belching from the fellow boggits 'As much as I'd love to stay and annoy you, I can't So goodbye!' There was a large explosion (which killed several of the guests), and when the smoke cleared, Bimbo was gone Fordo wandered outside What was he to do now?"

This example is typical – in *Bored*, there are no 'You are in a desert' descriptions You, as the player, take the part of Fordo, of course, and you will eventually be snickered into taking on the Quest for the Ring All this takes place in Western Middle Earth, and the locations are rather familiar

Here you'll come across the Land of the Personal Stereo-wearing Goblins, the Land of the Bouncing Elephants, and the Land of the Silent Ghetto Blasters, as well as the River Isn't the River Brandname and the Pointless Pathway

With a blinding flash of genius, McNeill and his co-writers worked on the adventure from the denouement to the start. Many programs suffer from '100th location boredom', which is only natural if the author is working in the usual way – starting off with great enthusiasm, ensuring a lot of literary cracker-jacks, while the latter stages eventually tail off, with more and more cliches replacing the invention. McNeil's strategy ensures that interest is built throughout the course of the adventure, and the game really does get better and better

Good use has been made of *The Illustrator*, with the very first scene being a take-off of one of the most famous pictures in adventure-land – the inside of a 'small comfortable tunnel-like hall', complete with a green door

Bored of the Rings comes on two cassettes at just £5 95 or micro cartridges at £8 95 (great value for money) and is the best Middle Earth fix you'll come across until Melbourne House finish the official *Lord of the Rings*.

Still on the subject of Quill'd adventures, Keith Wilson has recently written with news of his program, *The Lost Orb* A few millenia ago, he sent me a copy of the adventure for review, as so often happens, unfortunately, I couldn't find space to mention it in The Corner I thought it was rather nice with a strong, atmospheric story line concerning the search for the *mystical* Blue Orb

Now Keith has just a few tapes left, and is offering them at the giveaway price of just £1 50 (includes postage and packaging), a great saving on the original £6 00 – or you can send along a C20 tape plus £1 and a SAE Either way, it's a great offer and worth taking up The address to write to is KW Computing, 9 Middlewood Park, Livingston, West Lothian, EH54 8AZ

Finally this week, can anyone help with a new Jyym Pearson adventure called *Lucifer's Realm?* Any help would be of great assistance – even the first two or three locations have proved frustrating!

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This series of articles is designed for novice and experienced Adventurers alike Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter So if you have an Adventure you want reviewed or if you are stuck in an Adventure you cannot progress any further write to Tony Bridge Adventure Corner *Popular Computing Weekly*, 12-13 Little Newport Street London WC2R 3LD.

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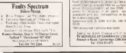
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COMPUTER SWAP

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ADVENTURE HELPLINE

Williamsburg Adventure 8 on C16 How do you get into the church? What do you do with the gravestone? S Tarver 118 Plymouth Road Penarth, S Glamorgan

Forest at Worlds End on Amstrad How do I get the key to unlock the chest without being killed by the witch? Paul Wainwright 3 Howard Crescent Dorker Nr Wakefield, W Yorks

Erik the Viking on Amstrad I can't find the woman's board or the giants N Mew 82 Coventry Road Warwick.

Staff of Karnath on Commodore 64. I have only found 8 pieces of the key and no secret compartments – can you help? John Clavery 8 Herrick House Milton Grove Newington Green London N16

Erik the Viking on Amstrad. Where is the woman's board? How do you kill the trolls? Also I can offer help on Return to Eden and Forest at Worlds End also on Amstrad. Richard Horne 18 Oakwood Avenue Elgin Scotland

Knotilla on Spectrum. What use is the crucible? How do I prevent the thief from entering? How do I open the chest in Tylnes bedroom C S Rainer 2 Mill Hill Road Hinckley Leicestershire

Planes Cove on Vic20 I can't get out of Pirate's island. What do I do? Chris Barney 26 Clipstone Crescent Leighton Buzzard Beds

Doomdark's Revenge on Spectrum. Where is Morkin and where is the spell of Thrunegorm? Niall Gasser Strwhall Fermoy Co Cork, Ireland

Valhalla on Spectrum How do I find Skoar Fristung and Grimnir? Stephen Jones 10 Thatch Close, Lewsey Farm Estate Luton Beds

Eureka (Modern Caribbean) on Spectrum. How do you get the magnet from the prison cell? Will help on any other section Paul Kernachan 98 Haughburn Road Pollock, Glasgow G53 6AN

Eureka (Prehistoric age) on Spectrum. How do you pass the brachiosaurus after you have fired the cannon? How do you cross the mountains? D S Holloway 34 Castle Close Calverton, Nottingham

Tir Na Nog and Eureka on Spectrum Any help appreciated Alan Smith Clough Head, Low Row Brampton Cumbria

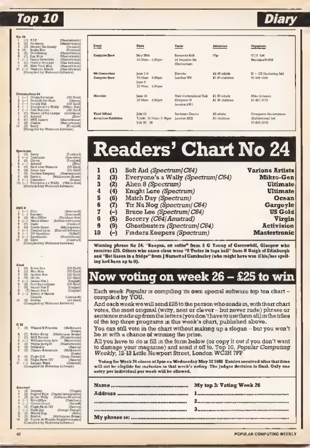
System 15000 on Spectrum. I can't get into Midminster Bank! Any other clues please Graham Munro 84 Glendee Road Renfrew Scotland

Message from Andromeda on Amstrad. I cannot get through the entrance room. David Joel 14 Woodland Way Goffs Oak Waltham Cross Herts EN7 5NT

Kingdom of Hamil on BBC How do I answer the final three questions? S Ahmed 68 Sherrick Green Road, London NW10

Quest Probe – The Hulk on C16. How do I get out of the underground room without being gassed? C Dobbs 1 Mackenfield Road Harrowgate N Yorks

Tir Na Nog on Spectrum I have found the four parts of the seal – how do I reunite them? Stephen Jones 10 Thatch Close Lewsey Farm Estate Luton Beds



Top 10

Vic 20

1	(1)	R.I.P	(Mastertronic)
2	(2)	Rockman	(Mastertronic)
3	(3)	Mickey the Bricky	(Firebird)
4	(6)	Snake Bite	(Firebird)
5	(2)	Doodlebug	(Mastertronic)
6	(7)	Bon Bon	(Mastertronic)
7	(—)	Space Scramble	(Mastertronic)
8	(6)	Psycho Shopper	(Mastertronic)
9	(9)	New York Blitz	(Mastertronic)
10	(—)	Phantom Attack	(Mastertronic)

(Compiled by Websters Software)

Commodore 64

1	(—)	Gregs Revenge	(US Gold)
2	(—)	Rolands Rat Race	(Ocean)
3	(—)	Bounty Bob	(US Gold)
4	( )	Everyone's a Wally	(Mikro Gen)
5	(—)	Pole Position	(US Gold)
6	(1)	Master of the Lamps	(Activision)
7	(3)	Airwolf	(Elite)
8	(6)	BMX Racers	(Mastertronic)
9	(8)	Chiller	(Mastertronic)
10	(7)	Boory	(Firebird)

(Compiled by Websters Software)

Spectrum

1	(2)	Boory	(Firebird)
2	(—)	Confuzion	(Incentive)
3	(3)	Gyron	(Firebird)
4	(—)	Airwolf	(Elite)
5	(6)	Raid over Moscow	(US Gold)
6	(4)	Bruce Lee	(US Gold)
7	(8)	Finders Keepers	(Mastertronic)
8	(9)	Starion	(Melbourne House)
9	(—)	Decathlon	(Ocean)
10	(—)	Everyone's a Wally	(Mikro-Gen)

(Compiled by Websters Software)

BBC B

1	(—)	Elite	(Acornsoft)
2	(—)	Snooker	(Acornsoft)
3	(3)	Mini Office	(Database Pub)
4	(—)	Manic Miner	(Software Projects)
5	(7)	Duck	(Firebird)
6	(4)	Castle Quest	(Micropower)
7	(—)	Combat Lynx	(Durrell Software)
8	(—)	747 Simulator	(D/Soft)
9	(—)	Spectipede	(Mastertronic)
10	(8)	Exra	(Firebird)

(Compiled by Websters Software)

Atari

1	(4)	Bruce Lee	(US Gold)
2	(1)	Mr Max	(US Gold)
3	(3)	Spitfire Ace	(US Gold)
4	(6)	Mr Do	(US Gold)
5	(—)	Smash Hits 1	(English)
6	(2)	Fort Apocalypse	(US Gold)
7	(6)	Smash Hits 2	(English)
8	(7)	Smash Hits 3	(English)
9	(—)	Attack of Mutant Camels	(Llamasoft)
10	(5)	Drelbs	(US Gold)

(Compiled by Websters Software)

C 16

1	(6)	Wizard & Princess	(Melbourne House)
2	(7)	Roller Kong	(Melbourne House)
3	(1)	BMX Racers	(Mastertronic)
4	(—)	Williamsburg Adv	(Microdeal)
5	(2)	Vegas Jackpot	(Mastertronic)
6	(5)	Scramble	(Anirog)
7	(3)	Classic Adventure	(Melbourne House)
8	(8)	Flight 015	(Craig Comm)
9	(4)	Flight Path 737	(Anirog)
10	(—)	Xargon Wars	(Gremlin)

(Compiled by Websters Software)

Amstrad

1	(2)	Sorcery	(Virgin)
2	(4)	Fighter Pilot	(Digital Integration)
3	(3)	Jet Set Willy	(Software Projects)
4	(—)	Mini Office	(Database)
5	(—)	Centre Court	(Amsoft)
6	(8)	Flight Path 737	(Anirog)
7	(—)	Dark Star	(Design Design)
8	(9)	World Cup	(Artic)
9	(7)	Hobbit	(Melbourne House)
10	(6)	Forest At Worlds End	(Interceptor)

(Compiled by Websters Software)

Diary

Event	Dates	Venue	Admission	Organisers
Computer Show	May 30th 10.30am – 7.30pm	Bartonia Hall 10 Swindon Rd Cheltenham	60p	C J S Ltd Northleach 609
5th Commodore Computer Show	June 7-8 10.00am – 6.00pm June 9 10.00am – 5.00pm	Novotel London W6	£2.00 adults £1.00 children	D + CS Marketing Ltd 01-830 5166
Microfair	June 22 10.00am – 6.00pm	New Horticultural Hall Greycoat St London SW1	£1.00 adults £1.00 children	Mike Johnson 01-801 9172
Third Official Acorn User Exhibition	July 25 Trade: 10.00am–1.00pm July 26 – 28	Barbican Centre London EC2	£2 adults £1 children	Computer Marketplace (Exhibitions) Ltd 01-930 1612

Readers' Chart No 24

1	(1)	Soft Aid *(Spectrum/C64)*	**Various Artists**
2	(3)	Everyone's a Wally *(Spectrum/C64)*	**Mikro-Gen**
3	(2)	Alien 8 *(Spectrum)*	**Ultimate**
4	(4)	Knight Lore *(Spectrum)*	**Ultimate**
5	(6)	Match Day *(Spectrum)*	**Ocean**
6	(7)	Tir Na Nog *(Spectrum/C64)*	**Gargoyle**
7	(–)	Bruce Lee *(Spectrum/C64)*	**US Gold**
8	(5)	Sorcery *(C64/Amstrad)*	**Virgin**
9	(9)	Ghostbusters *(Spectrum/C64)*	**Activision**
10	(–)	Finders Keepers *(Spectrum)*	**Mastertronic**

Winning phrase No 24: "Reagan, no softie" from S G Young of Garrowhill, Glasgow who receives £25. Others who came close were "6 Tories in toga hell" from S Seigh of Edinburgh and "Hot liason in a fridge" from J Surnett of Camberley (who might have won if his/her spelling had been up to it).

Now voting on week 26 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 26 closes at 2pm on Wednesday May 22 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .... My top 3: Voting Week 26

Address .... 1..

.... 2..

.... 3..

My phrase is: ....

New Releases

AESTHETIC

There have been a number of games for micros that use as their basis the idea of the sliding block puzzle, ie, a square made up of smaller squares which have to be shunted around to make a puzzle, or similar

Perhaps the most successful attempt to turn this idea into something that approaches an arcade game is *Confusion* from Incentive Software This is now out on the *Amstrad*.

There are around 64 screens of amazingly devious designs The idea is thus – in a limited time you have to shunt blocks around such that a lit fuse reaches a bomb, at the same time you must ensure that a water drop doesn't get onto the same path as your fuse and put it out. There are often several bombs to be detonated on any one screen The art of the game is to combine very quick reactions with quick thinking, working out in seconds the correct path for your fuse

It's infuriating and addictive and the patterns and colours have an aesthetic appeal

Games of this kind have sometimes not done well in the past (remember *Jumbly?*) but I hope this one isn't left on the shelf – much more fun than Wobbly Wally and his clones

Program *Confusion*
Price *£6 95*
Micro *Amstrad*
Supplier *Incentive Software*
54 London Street
Reading
RG1 4SQ

SQUELCH !

More signs that the Amstrad machines can expect some pretty nifty software in months to come Durell, respected for a number of games including *Combat Lynx*, has now released *Death Pit* for the Amstrad and it's an arcade game well up to Commodore standards, and maybe beyond.

Plot-wise, it's pretty dull. move your little man around the mine shafts looking for gold and gems, then take them back to the tent for points Lots of tunnels, lots of ladders lots of large horrible creepy-crawlies and lots of vicious green sludge. However there is a little more to the game than that You have to choose which items to carry with you – spades can kill some crawly things Oxygen lets you go through the flooded parts of the mine. As you go deeper and deeper (80 screens-worth in all), so you need to plan ever more carefully

The graphics are really excellent, finely detailed and large, and the animation is similarly effective except when the creatures chase you up or down a ladder where they appear to float magically. Crowning glories of the graphics are the enormous dragon's to be found in the deepest part of the mine where, of course, the most valuable treasures are to be found. The music speeds up with the action and features among other nice sound effects, some delicious squelching noises

It's the pits, so play it.

Program *Death Pit*
Price *£6 95*
Micro *Amstrad CPC464*
Supplier *Durell Software*
Castle Lodge
Castle Green
Taunton TA1 4AB

Pick of the week

DEVIOUS THINKING

Strangeloop is one of the most devious Spectrum arcade games ever, and now a welcome addition on the Commodore. Whilst there is plenty of blasting and dodging, finding your way through 250 screens is as much a matter of adventure style reasoning as quick reactions

The central character is a spaceman, an excellent detailed graphic with lots of animation. Lurking somewhere around the screens is a jet bike, which is useful but you have to find it first You'll also need some fuel tanks

The setting is a factory where the robots, as robots must, have gone berserk. There are pipes, channels, curious and relentless machines, gantries and presses, all potentially lethal.

It's tremendously difficult and constantly surprising – making a map is likely to be days of work. The graphics are excellent, as are the sound effects In a way, they are probably marginally less impressive on the Commodore – it's a matter of expectations, really well above average on the Spectrum and more like the Tony Crowther level we've come to expect from the better Commodore games. Probably months of entertainment, anyway

Program *Strangeloop*
Price *£8 95*
Micro *Commodore 64*
Supplier *Virgin Games*
2-4 Vernon Yard
119 Portobello Road
London
W11 2DX

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Confuzion	Arc	Amstrad	£6 95	Incentive
Money Manager	Ut	Amstrad	£14.99	Connect Systems
Decathlon	Arc	Atari	£9 99	Activision
Kissin Kousins	Arc	Atari	£6.95	English
Space Shuttle	Arc	Atari	£6.99	Activision
Magic Mushrooms	Arc	BBC	£12.95	Acornsoft
Tesselator	Ut	BBC	£27.95	Addison Wesley
Hustler	S	C16	£6.95	Bubble Bus
Defence 16	Arc	Commodore 64	£9 95	Probe
Kikstart	Arc	Commodore 64	£1 99	Mastertronic
Master of the Lamps	Arc	Commodore 64	£10 99	Activision
Quasimodo	Arc	Commodore 64	£9 95	US Gold
Strangeloop	Arc	Commodore 64	£8 95	Virgin Games
Make Music With	Ed	Commodore 64	£1.99	Mastertronic
Music Maker	Ed	Commodore 64	£9.99	Commodore
Jump Jet	Arc	Commodore 64	£9 95	Anirog
Magic Mushroomed	Arc	Electron	£11 95	Acornsoft
Boulderdash	Arc	MSX	£8 99	Orpheus

New Releases

MUNDANE

Ashkeron is the latest Mirrorsoft title, an adventure with what are described as "unique Walk Thru Graphics" – this impressive title is very misleading, since what you actually get is fairly mundane.

There is a graphic window in the top third of the screen and as you move around this shuts and opens like stage curtains to show the next picture. Like *Midnight* the pictures follow logically on from one another (sort of), so that something seen in the distance gradually gets nearer. It's quite nice but not earth-shattering.

The adventure is of the classic breed. Collect the five treasures that will form the dowry of Princess Zeraphina, avoid various unpleasantnesses along the way. There are the usual characters for you to get nowhere with along the way.

It's by no means a bad game, in fact some of the puzzles look horrendously complicated and the graphics are pretty nice. It's reasonably priced too.

Program *Ashkeron*
Price *£6 95*
Micro *Spectrum*
Supplier *Mirrorsoft*
Holborn Circus
London
EC1P 1DQ

NO HEADING

Tasword MSX is the long awaited version of the classic Spectrum wordprocessor for the MSX machines – if they have 64K (which, Yamaha CX5 computer music fans, that machine does not).

As you would expect, with the shared Z80 processor and similar screen sizes the program looks very much like the Spectrum original. As in that version the characters set has been redesigned so that it is effectively half normal size with 64 characters per line – just about enough to manage with A4 paper. There is though a useful option to switch back to the usual MSX character size and 'window' across scrolling the screen left and right across the text.

Tasword works on the 'what you see is what you get' principle where you make the document perfect on screen rather than using confusing control codes and the like and sending messages to the printer. It'll let you do pretty much everything you could want to do in general word processing – delete, insert, move blocks, search for words, move quickly from one end of the text to the other, and retains from the Spectrum a readily accessable *help* page and the excellent teaching file. You really can master *Tasword* in minutes, the tutorial is that good.

For the MSX there are a number of special pages of information about transferring Tasword to, and using it with, disc – it has been sensibly designed to load up the moment you switch the disc on. If you have an MSX machine (and the one virtue those machines do have are quality keyboards making wordprocessing that much easier), this is the software package you need. No contest.

Program *Tasword MSX*
Price *£13 90*
Micro *MSX*
Supplier *Tasman Software*
Springfield House
Hyde Terrace
Leeds LS2 9LN

SUBTLE SKILLS

Quasimodo, ie, *Hunchback*, seems like a game that has been around in 20 versions for every possible machine and yet there is another one. This one comes from a US Gold/Ocean tie-up and is originally from Synsoft in the States.

It is, in fact, one of the best such games, retaining all the usual bells and ropes, elements of *Hunchback*, but putting them together in a very professional way.

The game begins with you being attacked by soldiers scaling the walls of what is presumably Notre Dame. You have to collect and drop cannon balls on them, dodging the arrows they fire.

If you kill enough soldiers you get to collect a jewel and the fun really begins. You have an array of bells and platforms – you must swing on the bell ropes to move from platform to platform. This hackneyed arcade idea is redeemed by the subtle skills needed. You need to get enough momentum and swing at the right point on each rope – the bells also ring authentically with different tones according to size, so it's one way of figuring out whether you're swinging fast enough.

The design and excellent graphics make for an excellent game, but then it costs £9 95, which is well above your usual Commodore 64 game price. If you want to buy one *Quasimodo* game, this is it. If you already have one of the countless others, I think it's probably too expensive.

Program *Quasimodo*
Price *£9 95*
Micro *Commodore 64*
Supplier *US Gold Unit 10*
The Parkway
Industrial Centre
Heneage Street
Birmingham B7

This Week

Decathlon	Arc	MSX	£11 99	Activision
Zapper	Arc	QL	£15 95	Eidersoft
QL League	Ut	QL	£5	WD Software
Underneath the Undergt	Ad	Spectrum	£2	Workhouse
Ashkeron	Arc	Spectrum	£9 95	Mirrorsoft
Charlie + Choc Fact.	Arc	Spectrum	£5 95	Puffin
Give my Regards	Arc	Spectrum	£7 99	Argus
Herberts Dummy Run	Arc	Spectrum	£5 95	Mikro-Gen
Mount Challenge	Arc	Spectrum	£6 95	Aasvogulle
Wizards Lair	Arc	Spectrum	£6 95	Bubble Bus
Business Pack	Ut	Spectrum	£9 95	WD Systems
Pageword	Ut	Spectrum	£9.95	Reform
Transformer	Ut	Spectrum	£9 95	ACS Software
Cave Fighter	Arc	Vic20	£5.95	Bubble Bus



Key: Ad – adventure
Arc – arcade
Ed – education
S – strategy-simulation
Ut – Utility

TRENDY SATIRE

Hampstead was last year's program that brought satire to the world of adventures and set you the task of attaining *Hampstead*. You had to lift yourself from the gutter (eating take-away curries in your bedsit) into the ethereal world of colour supplements and Perrier water

The satire of trendiness actually became trendy itself and was featured in those self-same colour supplements. It's now available on the BBC and Electron, which are probably the machines trendy people are most likely to have.

It seems like nothing more than an extended joke, but actually it works well as an adventure – instead of finding where the magic runes are hidden, you have to find out how to cash your Giro It's technically straightforward, mostly two-word input but it is fun An adventure for those who might not ordinarily buy one.

Program *Hampstead*
Price *£9 95*
Micro *BBC/Electron*
Supplier *Melbourne House*
Castle Yard House
Castle Yard
Richmond
Surrey
TW10 6TF

WACKY

Tatung has released more programs for the Einstein which, on some of the package deals currently on offer is quite a good buy for some purposes One of the new titles is *Zork I*, first of the mammoth Infocom adventures and chock full of atmosphere and horribly complex puzzles. The big problem is it costs £41 40 so you'll need to be keen

More reasonably priced is *Punchy*, an arcade game by Mr Micro originally released on a couple of machines years ago. This time it's a mere £9 95 on disc which I guess makes it relatively cheap in some ways.

The game is a version of *Hunchback*, essentially, and involves jumping over pits, ducking beneath flying boxing gloves, grabbing moving platforms all to get to a baby's crib on the left hand side of the screen

All this would be dull enough, although the graphics are quite big and bright, but the game features speech

A Punch like voice says things like "rock the baby" and "that's the way to do it" in a tone that sounds exactly like Vivien from *The Young Ones* – the Einstein's tinny speaker actually aids this effect and it doubles the wackiness of the game

In fact, it's definitely some of the better micro speech around in terms of comprehensibility

Unoriginal then, but surprisingly entertaining

Program *Punchy*
Price *£9 95*
Micro *Einstein*
Supplier *Tatung*
Stafford Park 10
Telford
Shropshire
TF3 3AB

ON-SCREEN

Give My Regards to Broad Street, the Commodore program which some cruel people described as having a better sense of narrative than the film, has now been converted to the Spectrum.

The game involves driving a car around a map of London trying to meet up with various characters from the film who have the different sections of Paul McCartney's next opus.

The problem (apart from driving the car) is working out who is going where – a screen shows you which character has entered which tube station – using some information provided and looking at an on screen clock, you have to decide where they will exit and make your way to the tube before they get there

If you meet up with someone you will be given part of the song Collect the lot, find out how to mix it in the Abbey Road studios and you've won The Commodore version featured good graphics showing the different characters and a clever scrolling map of London.

The Spectrum version is slightly inferior in many ways – the map graphics are smaller and the car is much less detailed

The character graphics are as good though Obviously you lose out on the sound – the Spectrum does its best using code to give a wobbly double voice

A good game design and technically reasonable – well worth buying

Program *Give My Regards to Broad Street*
Price *£7 99*
Micro Spectrum
Supplier *Argus Press*
Liberty House
222 Regent Street
London W1R 7DB

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 3LD

This Week

ACS Software 3 Station Crescent, Westcombe Park SE3 7ER 01-305 0521 **Aasvogualle** Blakemoor, Marshbrook Church Stretton, Shropshire SY6 6QA 06946 345 **Acornsoft** Betjeman House, 104 Hills Rd Cambridge CB2 1LQ, 0223 316039 **Activision** 15 Harley House, Marylebone Road London NW1 01-486 7588 **Addison Wesley** Finchampstead Road, Wokingham Berkshire RG11 2NZ **Anirog** Victorial Industrial Park, Victoria Road Dartford Kent DA1 5AJ 0322 92513 **Argus** No 1 Golden Square London W1R 3AB 01-437 0626 **Bubble Bus** 87 High Street Tonbridge Kent TN9 1RX 0732 355962 **Commodore** 1 Hunters Road Weldon North Industrial Est Weldon Corby NN17 1QX **Connect Systems** 3 Flanchford road, London W12 9ND 01-743 9792 **Eldensoft** PO Box 54, Ilford Essex IG1 1BU, 01-478 1291 **English** Box 43, Manchester M60 3AD 061-835 1358 **Incentive**, 54 London Street, Manchester M60 3AD, 061-835 1358 **Incentive** 54 London Street Reading RG1 4SQ, 0734 591678 **Mastertronic**, Park Lorne, 111 Park Road London NW8 7JL 01-402 3316 **Mikro-Gen**, 44 The Broadway, Bracknell Herts 0344 427317 **Mirrorsoft** Mirror Group, Holborn Circus London EC1P 1DQ 01-353 0246 **Orpheus** The Smithy Hatley St George nr Sandy, Beds SG19 3HP **Probe** 74 Riblesdale Road London SW16 6SE **Puffin** Penguin Books 536 King s Road, London SW10 0UH 01-351 2393 **Reform** 4 Evelegh Road Farlington, Hants PO6 1DL 0705 379756 **US Gold** US Gold, Unit 10 The Parkway Ind Centre, Heneage Street Birmingham B7 4LY, **Virgin Games** 2-4 Vernon Yard Portobello Road, London W11 2DX 01-727 8070 **WD Software**, Hilltop St Mary, Jersey Channel islands 0534 81392 **Workhouse**, 37 Lodge



Words and pictures

One of humanity's most impressive inventions has been the Alphabet. The idea of the Alphabet is only about 3000 years old, and a large proportion of humanity are still without its undoubted benefits – for example, the Chinese or users of certain computers.

Picture writing is probably the oldest way of recording the objects to which we refer in our language (a circle for the moon, a square for a file) and can be universal. I may not understand that the letter C on a French tap means hot, but I understand that red means take care (and therefore hot).

Recently, such picture writing has become tremendously fashionable in computing circles – Icons are everywhere, on macs, Atari's DR Gem, even Icon driven games.

Pictograms have a certain universality. For example, there are many versions of the Chinese spoken language but only one written form, the pictogram. Chinese speakers may not understand each other's dialect, but Chinese writers are always able to communicate. In the middle ages stained glass windows in the churches were the poor man's bible, because he could follow the pictures though he could not follow the words.

Words, though, are far more flexible than pictograms but are not patently self evident. Though a child may understand a pictogram or a picture (and not understand a word or words), telling a story with pictograms requires (as with Chinese) far more pictograms than there are letters to be learnt.

Once a pictogram becomes an ideogram (a picture representing an idea) then the referents become less obvious and unintelligible. In Chinese the idea 'not' is represented by an arrow with a line on top (the stopping of movement?). The idea 'good' is represented by associating the pictograms for daughter and for son.

Now this is where the problems start with exclusively icon based systems: complicated or abstract ideas are very difficult to formulate in such a system. Pictograms are concrete objects and aim to be so, thus it is very difficult to convey abstract ideas by concrete means. With iconic systems, certain abstract ideas are conveyed by the actions which relate concrete objects.

The more complicated the ideas or actions at higher levels of abstraction the more difficult they are to implement with pictograms, because the nature of the system is such that such elaboration is not encouraged. Take the mundane idea of copying a file from one drive to another in some icon-based system. In such systems not only is the file represented by an icon (a pictogram) but also the action of copying is made concrete. One 'physically' drags the file from one source to the other. Fine.

To move a large number of discs in CP/M or MSDOS we can use wild cards in disc file specifications. The question then becomes one of how does one transfer a collection of such files using such an iconic approach. One solution is to move all the files (physically) to a file collection icon, and move the files collection icon to the new situation. This does represent file copying in a concrete way but it is not a system which allows for extensibility.

To alter the iconic basis and allow for user modification (and not all users are initially or subsequently moronic) there needs to be some mechanism, such as an alphabet-using operating system. At the very least there needs to be a sophisticated programming language. An iconic system based on an attempt to be easy enough for children to use should not ignore the rapid onset of computer sophistication which attacks many youngsters once they start to use computers.

An easy way in to a system should not have to end up as a straight jacket for the user of improving expertise and sophistication. This is the attitude taken by the developers of Smalltalk-80, particularly as exemplified by the work at Xerox. Contrary to popular opinion, all iconic systems are not the same: the iconic systems developed in Smalltalk have all the flexibility of conventional operating systems (down to wild cards), and not set firmly in concrete.

The Smalltalk-80 environment is a true *environment*. It is not some front-end which can be tackled on to conventional applications, as are some of the newer iconic/windowing systems, nor is it a system which is dominated by the iconic front end to the detriment of the system, as are some of the newer integrated packages. Smalltalk-80 is well named, it is about talk, and talk uses words. (It is well worth reading Adele Goldberg's *Smalltalk-80/The Interactive Programming Environment* Addison-Wesley 1984.)

The main point is that iconic systems are not necessarily of that great utility, even for the naive user, because sophistication soon increases and constraints soon appear.

The world of work is about words and numbers, and less about graphics.

If we are not careful the graphical capabilities of iconic systems will blind us to words and numbers.

One word can be worth a thousand pictures.

Boris Allan

Four pairs

Puzzle No 158

If I were to take the four-digit number 8176 and multiply it by itself I would get a result of 66846976. This number can then be divided into four pairs of digits as follows:

66 84 69 76

It will be noticed that each of these pairs of digits forms a number which lies within the range covered by the ASCII code for the upper case letters, and so consequently the corresponding letter can be transported in each case. In the example given this substitution would result in the letters *BTEL*.

Of course, in a great many instances one or more of the pairs of digits will fall outside the range of the upper case letters in the ASCII (i.e. not in the range 65 to 90), and so these would have to discounted.

Can you find a four-digit number that will produce a common English word when 'decoded' as described?

Solution to Puzzle No 153

The other value is 82428241 = (9079^2)

```
10 FOR N=3163 TO 9999
20 LET S=N*N
30 LET S$=STR$(S)
40 LET A$=LEFT$(S$,4): LET B$=RIGHT$(S$,4)
50 IF VAL(A$)-VAL(B$)=1 THEN PRINT N,S
60 NEXT N
```

The program test values of *N* in sequence from 3163 to 9999. The square of *N* is put into a string (*S$*) and the first four and last four digits are tested to determine if there is a difference of 1 between the two numbers so formed. Apart from the value given in the question these are the only eight-digit solutions possible.

Winner of Puzzle No 153

The Winner is S G Young of Garrowhill, Glasgow, who receives £10.

Rules

If the puzzle can be sensibly solved using a computer then the winner will have included a listing of the program used to find the correct answer. The closing date for Puzzle 158 is June 12.

The Hackers


NEW RELEASES
Fantastic Voyage
6.95 48K SPECTRUM
Mighty Magus
QUICKSILVA
Quicksilva Mail Order,
P.O. Box 6, Wimborne,
Dorset BA21 7PY.
Telephone (0202) 891744.
Selected titles available at:
WHSMITH
Boots
WOOLWORTH
John Menzies
and leading multiple retailers and spec alist computer stores.